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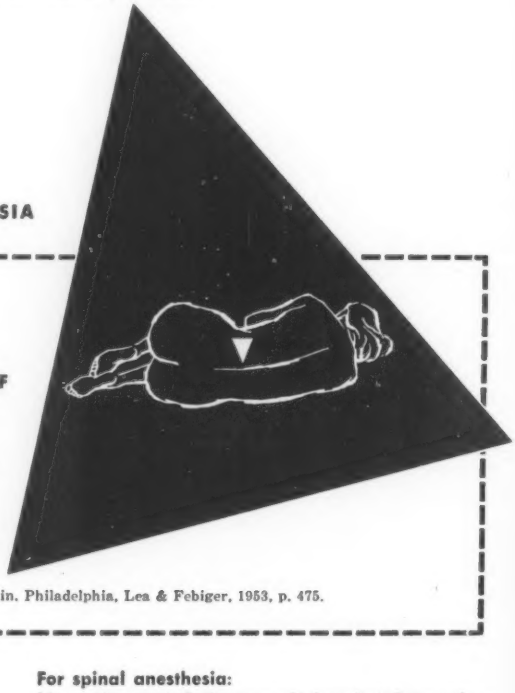

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*Bonica, J. J.: The Management of Pain. Philadelphia, Lea & Febiger, 1953, p. 475.

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MILITARY MEDICINE

ORIGINAL ARTICLES

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The Blood Program in the Korean War*

By

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(With 8 illustrations)

ALTHOUGH there was no established blood bank in the Far East Command when the Korean War began, whole blood from an operating blood bank was available to the first medical field installation when it began to receive patients. Thereafter, regardless of the fortunes of war, blood was always available in adequate amounts to meet the requirements of the combat forces. This paper will describe the organization and establishment of a functioning blood bank under emergency conditions, the difficulties encountered, the policies established, the storage and distribution practices, the problem of estimating blood requirements, an analysis of the amount of blood issued, the amount actually used, and the use of group "O" blood for all patients in the field. Certain recommendations will be based on experience during the period July 1950 to July 1953.

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ORGANIZATION AND MISSION OF THE BLOOD BANK

On 3 July 1950, responsibility for collecting and distributing blood in the Far East Command was assigned to the 406 Medical General Laboratory and on 7 July blood was delivered to the first hospital unit arriving in Korea. To accomplish this, personnel were diverted from other laboratory activities, available supplies and bleeding sets were obtained from depots, base and mobile bleeding sections were established, additional refrigerators were obtained, and an intensive publicity campaign to obtain donors was initiated. In August 1950, the 8090 Blood Bank Laboratory Detachment was activated and attached to the 406 Medical General Laboratory although it was sometime before qualified personnel were acquired. By September 1950, a more realistic appraisal of the "police action" in Korea indicated that blood sources in Japan were not sufficient and group "O" blood was being supplied from the Continental United States.

The mission of the Tokyo Blood Bank was to supplement shipments of group "O" blood from the Zone of the Interior, to furnish blood of all groups and types to hos-

pitals in Japan, to act as a blood distributing center for the theatre, to investigate blood storage, distribution and use policies and practices, and especially to furnish sufficient blood to meet emergency requirements during the time increased shipments were in transit from the United States.

Difficulties

During the early months of the war, operation of the blood bank was plagued by shortages of critical supplies. Vacuum bottles were not available in sufficient amount and it did not appear that a sufficient supply could be obtained immediately from the United States because of the high priority given to other supplies. Under close technical direction and controlled by rigid laboratory testing, selected Japanese firms produced ACD vacuum bottles, as well as disposable donor and recipient sets, which met American standards. Even pyrogen-free water became critically short, the emergency being met by continuous operation of an improvised distillation system.

Few of the staff had had prior blood bank experience but were trained as they worked. They were assisted by a group of devoted part time volunteer workers mainly from the American Red Cross and later from the Japanese Red Cross also. These volunteers served as receptionists, nurses aides, clerks, and in many other capacities. Certain of the volunteers conducted much of the publicity and public relations work which was so important in obtaining donors. In this activity the radio and press facilities under military and Japanese control cooperated wonderfully, as did most of the prominent visitors to Japan.

Fig. A. Gasoline powered refrigerator on truck used to prechill vacuum bottles and provide refrigeration for blood drawn by the mobile bleeding team.

Disposal of outdated blood was a constant problem. No method was found for maintaining a reserve of a perishable agent such as blood in amounts sufficient to meet expected requirements without an appreciable portion becoming outdated. Of course this is true even in fixed civilian hospitals where the requirements for blood transfusion are much more stable than on the battlefield.[1] When blood was urgently needed widespread appeals for group "O" donors produced many volunteers of other blood groups who could not be dissuaded from donating blood without antagonizing them and injuring the intensive drive for donors. In such periods depot stocks of groups "A" and "B" would exceed desired levels. The blood bank was directed to send the outdated group "O" blood and excess blood of other groups to Korean depots. Some of it was used apparently without harm as supportive therapy for tuberculosis and prior to elective surgery in base hospitals of the Republic of Korea Army. When Korean military hospitals were established further forward, blood approaching the outdating limit, and later fresher blood was sent to these hospitals.

During 1952 when the combat situation was relatively stable, the usual daily shipment of blood to Korea consisted of 240 bottles. During the frequent short periods of combat activity, it was not unusual to send up to 800 units of blood daily to Korea and then to send none during the lull in activity which often followed. Despite a definite informational effort to acquaint

donors collectively and individually with these facts, the flow of donors could not be cut off too sharply at such times without many being offended and thus jeopardizing a favorable response to subsequent emergency appeals. Also previously increased shipments from the United States continued to arrive for a brief period after such a lull even with the earliest possible notification of reduced needs. On a few occasions persons in high authority scheduled the bleeding of large units for its publicity value to the national blood program despite the fact that there was little need for the blood at the time. With these wide fluctuations in requirements and supply, there were wild fluctuations in the amount of blood in reserve in Tokyo ranging from almost none to over 2000 units.

The Japanese medical profession seldom used transfusions and there had never been a blood bank program on an appreciable scale. Nevertheless, many Japanese individuals, social groups, and labor unions volunteered as donors even before publicity was aimed at them specifically. A complication which arose was a restriction against collecting more than 200 ml. of blood from any of these donors. With the support of the Japanese Medical Association, the 200 ml. limit was replaced by a table of comparative values which established the volume of blood to be collected from persons of small stature. The relatively lower incidence of group "O" and the invariable presence of the Rh factor limited somewhat the full applicability of this large donor group to recipients whose distribution of blood group and Rh type was somewhat different.

Policies

The general policy was established that only group "O" blood would be sent to Korea. The antibody titer was indicated on the label in order that high titer blood would be used on "O" recipients only, while that of low titer could be used for all patients. Although all blood was labeled as to Rh type, no attempt was made in Korea to determine the recipient's Rh factor, it being felt that serious reactions on the basis of Rh incompatibility were unlikely in battle casualties. The calculated risk obviated the need for maintaining separate supply levels and recognized the emergency nature of the use of blood in combat surgery. The hospitals in Japan determined the group and type of all patients prior to transfusion and used compatible blood which was further checked by crossmatch.

Storage

Blood was considered to be outdated 21 days after collection, and this expiration date was printed on the label. Investigation late in 1952 indicated that blood deteriorated fairly slowly during the first 10 to 14 days of storage and thereafter more rapidly. Even before this, measures had been instituted to get fresher blood to the patient. When it was pointed out to them, medical supply officers at the depots quickly recognized that the usual supply practice of "first in, first out" did not apply to blood because that practice resulted in putting fresh blood on the shelves while old blood was sent to the hospitals. However, the attempt to give fresher blood aggravated the problem of trying to reduce the amount of blood becoming outdated and at the same time maintaining reserves for emergencies. This problem was further complicated by the establishment of multiple reserve depots (see below). Early in 1952, the blood on the average was 18 or more days old when it was given to the patient, but by the end of the year, this had dropped to about 14 days.

The necessity for maintaining blood at a constant low temperature was recognized at all installations. At first, batteries of miscellaneous small refrigerators had to be used. Later, large walk-in refrigerators became available at major depots. All installations maintained a close watch for fluctuation of temperatures in the refrigerators by frequent periodic inspection of thermometers in the refrigerators or the use of constant recording thermometers. Despite this, there were two or three instances when the entire re-

FIG. B. "Marmite" food container used during early months of the war for shipping blood to Korea. Ice was placed in closed compartment being inserted on top of the blood.

serve at an installation was destroyed because thermostat failure resulted in freezing overnight.

DISTRIBUTION

Various expedients were used to maintain refrigeration during shipment of blood. In all methods, wet ice was placed in a separate metal container in close proximity to the bottles of blood. At first, standard "marmite" food containers were used. (Fig. B) These were bulky, heavy, could hold only a few bottles of blood and were seldom recovered from the receiving unit in the field. Later, insulated plywood boxes with hinged tops, metal racks for 16 bottles of blood, and a central metal container for ice were used. (Fig. C) These withstood moderately well the rigors of exposure to weather and rough handling, and were not well suited for other purposes so that relatively all were returned. Temperature below 10°C. was maintained in these boxes for at least 24 hours with one filling of the ice container which was easy to reach if re-icing was necessary. These containers were used for the shipment of blood to all depots and medical using agencies within the theater. More elaborate but similar trunk-like containers were developed in the United States for the shipment of blood to the Far East Command.

The blood bank in Tokyo was responsible for the distribution of all blood in the theatre. It, therefore, maintained a large reserve to meet any contingency. (Fig. D) Routine shipments of blood were received six times a week from the United States, one of the shipments being twice as large as any of the others. Although, in emergency, additional blood could be obtained from the Zone of the Interior within 48 hours, it was assumed for planning purposes that four days would elapse between the time a cable was sent to the Armed Services Blood and Blood Derivatives Group for additional blood and the arrival of the blood in Tokyo. During this time, the blood bank, by using its reserves in Tokyo and by increasing activity of the bleeding teams, was responsible for providing the required blood. It was estimated that the Tokyo depot could send to Korea 3500 units of blood during the 4

FIG. C. Shipping box containing 16 bottles of blood in two levels developed and made in Japan for transporting blood to Korea. Ice was placed in the covered metal cylinder in the center.

day maximum waiting period for increased shipments to arrive from the United States.

Until the early months of 1951, the hospitals in Japan received patients who had been wounded only a few hours or days before. During this time, these hospitals required large amounts of blood. Two sub-depots were established to meet these needs. One supplied the hospitals in Southern Japan and served as an emergency depot for the Pusan area while the other served the hospitals in the Osaka area. These sub-depots received their blood from Tokyo by rail, a baggage car having been equipped with refrigerators for this purpose.

The blood sent daily by air to Korea was accompanied by a courier who, at first, made delivery direct to hospitals. Later, the shipments were taken to the medical supply depot which then assumed responsibility for proper storage and distribution in the combat zone. This in turn made the depot commander responsible for the availability of an adequate supply of blood, forcing him to maintain reserves of blood to meet emergency situations. After the landing at Inchon and the break-through from the Pusan area, independent depots were maintained in Pusan and Seoul. The Seoul depot subsequently established two sub-depots which in turn maintained reserve supplies.

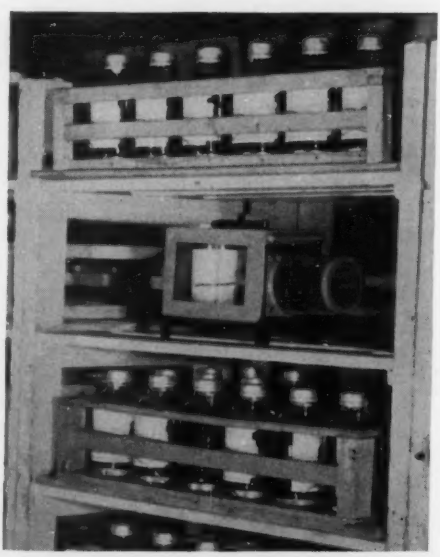


FIG. D. Blood stored in walk-in refrigerator in Tokyo awaiting shipment to Korea. Note the constant recording thermometer.

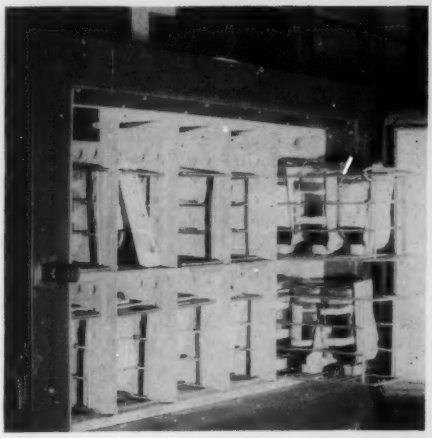


FIG. E. Interior of refrigerator at the Seoul depot.

Blood from Tokyo reached Seoul eight to twelve hours after being requested. (Fig. E) The sub-depots in the Eighth Army area could receive blood from Seoul in 2 hours if weather permitted air transport with a maximum of 8 hours under adverse weather conditions. The hospitals could obtain blood from the sub-depots in an hour or less. As the time required for receiving blood decreased, smaller reserve stocks were maintained. However, there was a limiting factor which was related to the psychology of preparedness. There was always the realization that although excess amounts of blood were undesirable, inadequate amounts were disastrous. Just as the soldier who has used his tenth grenade on a combat patrol will not willingly carry a lesser number on his next foray, so the commander who has seen 100 units of blood administered in a single influx of casualties will not decrease a high blood reserve until assured that active combat has definitely subsided and will not suddenly re-appear.

Estimating Blood Requirements

When the blood bank was first established,

a search was made for a method of estimating blood requirements. The single reference available[2] reported that the British, based on experiences in the Middle East, recommended using 0.1 units per soldier wounded in action (WIA); that the data from U. S. Forces in the Mediterranean Theatre indicated that 0.45 units were used per WIA; that the whole Blood Committee of the European Theatre of Operations utilized for Planning purposes 0.2 units of blood per casualty (type not stated). Experience during the first five weeks of the war in Korea indicated that 0.8 units of blood per WIA were required, a much higher figure than any previous estimate but due to rise even higher.

In view of the build-up in troop strength in Korea projected for the period August 1950-February 1951, a long-term estimate of casualties was attempted. It was assumed that heavy combat losses would continue until UN Forces gained tactical superiority; losses would then be at a moderate rate but still increasing for an additional period as the size of our forces continued to grow. Finally, enemy resistance would be overcome, guerrilla and police action might continue, and non-combat injury would become of relatively greater importance. Applying the factor 0.8 pints/WIA, blood requirements for the six month period could be expected to increase gradually with a maximum to be reached in October 1950. These estimated requirements far exceeded the estimated 100 units per day which could be collected over a prolonged period by repeated donations from the 20,000 potential donors in the Tokyo-Yokohama area. A request was therefore made that group "O" blood be sent from the United States and this request was promptly honored.

As the war progressed, it became increasingly difficult to plan blood bank activities on the basis of daily intelligence reports. The changing tactical situation was accompanied by changes in the medical support program. Hospitals in Japan lengthened their evacuation policy and more frequently used blood for treatment of non-battle casualties and disease. Medical organizations in Korea insisted on maintaining high stock levels of blood. Since these could be depleted as readily by outdating as by use, requests for additional blood did not always reflect battle activity. Throughout the war, there was a constant and progressive increase in the percentage of battle casualties transfused and in the amount of blood used in the treatment of war wounds.

In 1952 and 1953 local actions, probing attacks, and defense of strong points characterized the fighting. There were few offensives and these were limited and of short duration. Often it was the enemy who determined the combat area and severity of the fighting. Consequently, short term prognostications of the number of combat casualties to be expected became less reliable.

As a result of the interplay of these various factors, attempts to prognosticate needs for blood on the basis of expected combat activity were largely abandoned. They were replaced by a policy of obtaining sufficient blood to meet requests and maintaining a reserve in Tokyo of 800 to 1200 units of blood. On the few subsequent occasions when blood was obtained in anticipation of requirements, results were quite poor. However, it is still believed that planning for blood requirements is a logical method of blood bank operation and that, under a different situation and with due allowance for the modern more liberal use of blood in treating battle casualties, this method would be successful.

The desirability of giving patients blood as fresh as possible complicated the attempts at estimating blood requirements and maintaining a blood reserve. In theory, the Tokyo Blood Bank would extract about 50 units of blood from the amount received each day putting these units in the reserve and replacing them with blood 15 or 16 days old. This group of fresh and old blood would be sent to the depots in Korea where the old blood would be used to replace reserve blood which had become outdated while the

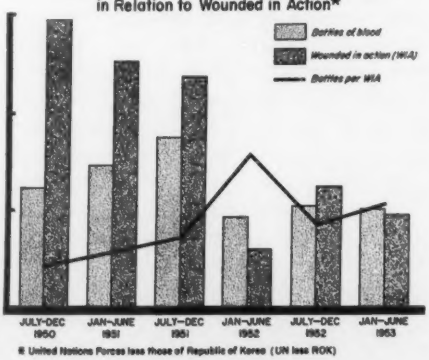
fresh blood would be given to patients. In practice, the need for blood was rarely constant but rose and fell like great and unpredictable tidal waves. It was necessary not only to record the amount of blood on hand but also the expiration date of every unit to guard against the entire reserve becoming outdated at one time if it had accumulated during a quiet period.

Issue of Blood

In 1950 and the first half of 1951 recently wounded patients often received first definitive care in hospitals in Japan. During a three months' period in 1950, 77% of battle wounded were evacuated to Japan while during a similar period at the end of 1951, 48% were evacuated to Japan. It is not known what percentage of the blood sent to hospitals in Japan was used for the treatment of battle casualties but an indication that much of it was not used for the immediate treatment of the battle wounded is seen in the fact that these hospitals requested almost as much blood in the first half of 1952 when casualties were lowest as in the second half when twice as many casualties occurred (Fig. 1). In the three years covered by this report, approximately 18% of the blood distributed by the Tokyo Blood Bank went to hospitals in Japan.

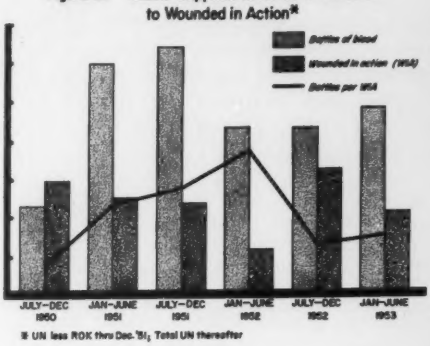
In Korea, during 1950, most of the field hospitals were in the Pusan area, and of necessity primarily served to render casualties transportable as soon as possible to Japan. Throughout most of 1951 the hospitals of Eighth Army were more numerous, widely dispersed, and played a larger role in the care of wounded. By 1952 the hospitals in the southern part of Korea played a less prominent role in the care of battle casualties. In August 1952, the southern three-fourths of the Republic of Korea (ROK) was designated a communication zone and the northern portion was assigned to Eighth Army as a combat zone. In Fig. 2 the blood sent to all of Korea in 1950 and 1951 was considered as sent for the treatment of battle casualties while thereafter only the blood sent to Eighth Army was so considered.

Figure 1. Blood Supplied to Hospitals in Japan in Relation to Wounded in Action*



* United Nations Forces less those of Republic of Korea (UN less ROK)

Figure 2. Blood Supplied to Korea in Relation to Wounded in Action*



* UN less ROK thru Dec. '51; Total UN thereafter

It was not possible to determine from the available information what portion of the blood issued was actually used for the treatment of battle casualties. However, it is of greater importance for blood bank operations to determine how much blood must be supplied per battle casualty. Unfortunately even this simple calculation could not be made accurately, because, after 1951, increasing numbers of Korean troops were assigned to U. S. forces and received treatment in U. S. Hospitals and at the same time blood was sent to some but not all of the ROK field hospitals. Korean doctors did not use blood as liberally as American doctors, and they did not make direct requests for blood but received available blood which was in excess of the requirements of U. S. hospitals. Consequently, inclusion of all

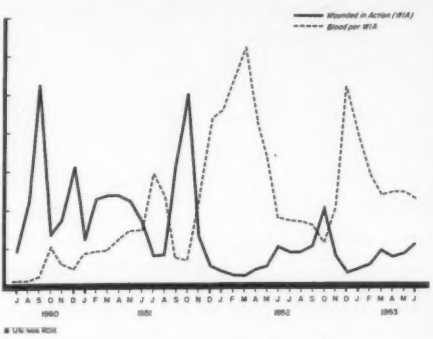
ROK casualties to whom blood was not always available decreased the ratio of blood supplied per casualty while omission of ROK casualties removed a significant number who received such treatment. During a 2 week survey in 1952, 29% of blood transfusions in American hospitals in Korea were given to Korean troops mostly attached to American units and during this time 70% of all casualties were Koreans. It has been estimated that from 20 to 30% of the blood received by Eighth Army depots in 1952 and 1953 was sent to ROK hospitals and approximately 50% of the blood sent to Eighth Army was used for the treatment of ROK casualties. However, a firm policy for supply of blood for Korean casualties was never established. Some blood was requested with the intent of sending it to ROK hospitals but much of the blood sent to Eighth Army was originally requested for U. S. Army hospitals and would have been destroyed because of outdating if not previously sent to the ROK hospitals.

Omitting the build-up phase of 1950 as not representative, between 2.10 and 3.39 units of blood were supplied to the combat zone for each casualty incurred (January 1951 to July 1953). Even the lower of these two figures is greatly in excess of rates of actual use of blood to be discussed later.

One of the reasons for the apparent issue of blood to Korea in excess of the amount used is the need for maintaining reserves. Without changing the reserve level, there are many more units of blood per casualty in reserve when the number of casualties are few than when the number of WIA is large. Further when there are many casualties there is much more rapid turnover of blood in stock, the reserves are used more efficiently, and there is little outdating of blood. At such times, consequently, a greater proportion of the blood is actually used for the treatment of casualties.

When the combat zone data are charted monthly (Fig. 3), an inverse proportion is evident between the number of casualties and the issue factor of bottles of blood per casualty (B/WIA). This emphasizes that it was the reserves maintained at a high level which determined the amount of blood issued to Korea and that during periods of activity only a relatively small additional amount was needed.

Figure 3. Blood Issue Factor in Relation to Wounded in Action by Month*



Three factors determined the reserve level. One, already mentioned, is the psychological attitude that the maximum amount of blood required at any time must always be available. The second factor is the time required for replenishing the blood reserve. The possibility that bad weather will increase the time required for transportation of blood is an important consideration in determining how much blood must be available. The third factor is the number of organizations maintaining reserves of blood. There were as many as five stores of blood between the donor in the U. S. and the wounded soldier in Korea: the processing center in California, the blood bank in Tokyo, the depot in Seoul, the sub-depot in the corps area, and the surgical hospital blood bank. Each of these maintained reserves for emergencies. The amount of blood which would have been destroyed because of outdating would have been great were it not for the fact that the California depot could divert unneeded blood to fractionation centers and the depots in the Far East Command could give it to the ROK hospitals which needed it. The magnitude of this problem is indicated by the fact that during a period of intense combat activity there was available in the theatre

more than 12 times the average daily amount given to casualties other than ROK on any one day. Under other circumstances, the multiplicity of stores of blood would have been inefficient and wasteful.

Use of Blood

It is difficult, during combat, to determine how much blood is actually being given to the war wounded. Detailed records are not maintained and are often inaccurate when large numbers of casualties are received. The amount of blood given to a wounded soldier depends not only on the severity of his injury but on the type of medical installation. The surgical hospitals give more blood per patient than do the division medical units or the evacuation hospitals.

During 1950 and part of 1951 recently wounded soldiers were treated in hospitals both in Korea and Japan. No estimate is available concerning blood used during the early part of this period. Applying the best data available during the period 1 April-31 August 1951, 0.6 units were used in Korea per battle casualty admitted to hospitals.

In 1952 a survey of blood distribution and use was conducted in Korea during a 2 week period when our forces were experiencing the largest number of casualties received during the year. Information was obtained in two ways. The medical units listed the number of casualties received and the number of units of blood given to patients who were identified by name, rank and serial number. At the same time machine records casualty reports were studied which listed by name, rank, serial number and organization, all U. S. Army casualties during this period. Two months later the status of each of these patients was reviewed. With this information, it was possible to determine: (1) how blood was used in medical installations at different levels in Korea, (2) the amount of blood given to Korean troops treated in U. S. Army hospitals, (3) the amount of blood given to casualties in relation to the duration of disability as a measure of the severity of injury, (4) the average amount of blood actually used in the treatment of battle casualties, (5) the tendency to use low titer blood in preference to high titer blood, and (6) incidence of transfusion reactions.

For the purpose of this survey, the Mobile Army Surgical Hospital (MASH) was considered as a Corps unit and the Evacuation Hospital as an Army unit. One of the Evacuation Hospitals was also the Renal Failure Center, and used a larger proportional amount of blood because of this function.

The survey indicated that approximately 20% of all wounded in action received blood transfusions at an average rate of 4.3 bottles per transfused patient or 0.9 bottles per total U. S. wounded. This information is given for the medical installations at different levels and for Eighth Army as a whole in Table 1 based on casualty reports of U. S. Army war wounded only.

At the time of the survey, divisional medical units used little blood proportionately, possibly because the large influx of casualties did not permit extended care of severely wounded at that level. An exception not included above existed in the Medical Battalion of the Marine Division whose medical companies function in a manner comparable to a MASH. It was understandable, therefore, why 29% of casualties admitted to such USMC installations were transfused. Most of the blood in the combat zone was used by

Table 1

Blood Use Factors by Echelon of Medical Care

	% of WIA transfused	No. of bottles per WIA	Number Bottles per patient transfused
Division Level	2.0	0.09	4.4
Corps Level	29.3	0.99	3.4
Army Level	5.4	0.15	2.7
Total 8th Army*	20.2	0.9	4.3

* Corrected for admission to and transfusion in more than one unit.

MASH's in keeping with the primary mission of these hospitals to provide resuscitation and initial surgery to non-transportable, severely wounded. In fact the more severely wounded frequently were flown directly by helicopter from the Battalion Aid Station to the MASH by-passing other division medical units. Although all of the severely wounded patients were sent ultimately to the Evacuation Hospitals, this generally was not effected until resuscitation and immediate surgery had been accomplished. For this reason and because of the number of transportable, less severely wounded moved directly from Clearing Station to Evacuation Hospital, a much lower percentage of those admitted to the latter installations required transfusion.

During the period of this survey, more than 1500 U. S. Army troops were wounded in battle. Analysis revealed 21% were seriously wounded and 79% lightly wounded. When records on these patients were analyzed two months later (Table 2), 3% of the wounded had died, another 3% originally considered seriously wounded had been returned to duty, and 15% also seriously wounded were still hospitaiized. At the same time 34% of the wounded were still hospitalized despite an original categorization as lightly wounded. The amount of blood given with relation to severity of injury is given below. The large amount of blood given to 69% of the seriously wounded is not surprising but that almost 4% of the lightly wounded returned to duty should get an average of 2.2 units of blood indicates how freely transfusions of whole blood were given.

During the period of survey, there was a definite tendency to use low titer blood for all patients although this in part was regulated by the amount of low titer blood locally available. Thus 72% to 82% of Koreans whose blood type was unknown were given low titer blood while 60% to 80% of U. S. troops whose blood type was recorded on blood tags were given low titer blood. If there was excess blood at an installation, it was the high titer blood which was retained in the reserve.

The survey also showed that under combat conditions, very little attention was paid to the possibility of transfusion reaction. Only 2.5% of the patients transfused were reported to have had reactions and these were all of the minor urticarial or febrile type. One hospital which treated only 7.5% of the patients transfused reported 58% of these reactions. Although serious transfusion reactions often cannot be detected in patients in severe shock or under anesthesia, the general evidence based on autopsy studies, post-operative hospital course, reactions in lightly wounded casualties and the investigations at the Renal Failure Cen-

TABLE 2

BLOOD USE BY SEVERITY OF WOUND

Category	Percent of Total WIA	Percent of Category Transfused*	Units of Blood per WIA	Units of Blood Per Patient Transfused
Died of Wounds (DOW)	2.8	55.1**	7.0	12.7
Seriously Wounded	15.1	69.0	3.1	4.4
Seriously Wounded returned to duty	3.4	13.6	0.4	3.0
Lightly wounded	34.1	17.8	0.5	2.6
Lightly wounded returned to duty	44.5	3.8	0.08	2.2
All cases		20.2	0.9	4.3

* Corrected for admission to more than one medical unit.

** 20% DOW known not to have received blood and 25% DOW may have received blood but not identified by name on any transfusion records.

ter all indicate that little hazard was attendant on the use of group "O" blood for all casualties.[3] The advantage of having blood immediately available for resuscitation without the necessity for waiting for a laboratory procedure more than out-weighed the potential hazard present.

Discussion

Adequate prior plans had not been prepared for the unexpectedly sudden attack on South Korea and our precipitate involvement under United Nations urging. Such a situation may recur and with the possibility of atomic attack, our medical concern may well be with our homeland. Since it is not feasible to maintain on a stand-by basis military units such as Blood Bank Laboratory Detachments or Blood Bank Bleeding Detachments, the alternative would be to assign the responsibility for the emergency establishment and operation of a regional blood program to a suitable medical unit in each overseas command and at strategic locations within the continental United States. Each responsible medical unit should be required to formulate appropriate plans, and to ascertain that sufficient supplies and equipment are available at a known depot. Such an emergency function cannot be continued indefinitely, however, and plans should extend to the rapid mobilization of the proper units capable of assuming blood program responsibilities.

The Korean War was not one of the major military operations from the standpoint of size in this century of world wars. Accordingly it is not surprising that adequate amounts of blood were always available. In World War II rationing of blood was necessary on occasion,[2, 4] and in future catastrophies it may again be necessary. In such an event *it is essential that one individual be responsible to the area surgeon for the adjustment of supply of blood to demand by control of collection, requisition, storage, and distribution.*

Experience in the Korean War suggests that a blood program of greater efficiency would have resulted had responsibility for the entire area been assigned to one organization under the command of a medical officer qualified to supervise blood collection, storage, distribution, and use. It is furthermore felt that then any limitation on availability of blood would have been charged properly to that individual rather than to the medical depot commander, whose responsibility would appear to be limited more reasonably to providing refrigerated holding facilities for the blood.

The centralization of all blood collection within the theater was dictated initially by supply problems and limited donor sources. Later, large hospitals in the rear areas should have been encouraged to organize their own blood program with locally available donors and facilities. Assistance and some continuing supervision would doubtless have insured satisfactory operation. Further exploitation of local resources by use of multiple collecting centers or by a means of a railway collecting unit was considered, and could have been used to meet total requirements. This would have greatly increased the role of the supervising and coordinating agency, however. Such plans were not put into use because of the lack of a suitable means of plasma salvage within the theater, and because of the desirability of continued integration with the national blood program.

In many hospitals in Korea surgeons held that fresh blood which was type specific was greatly to be desired over stored blood from universal donors. Under combat conditions in the field, however, this is not only hazardous but impractical, the feasibility of satisfying such a desire disappearing rapidly within an army zone. In addition, it was conclusively demonstrated that type specific blood, such as group "A", should not be given to a patient of that type if he had recently received multiple transfusions of group "O" blood in forward hospitals.[5]

It is evident that the trend is towards more liberal use of blood. When indicated, blood transfusions are of great value in the treatment of the wounded. However, indis-

criminate and excessive use of blood as a sort of harmless medical insurance is not without danger because, despite all efforts, there is the possibility of human error in typing and labelling blood and because of the possibility of immunizing the recipient unnecessarily through Rh or other factors in the blood.

Consideration of future situations entailing a shortage of blood emphasizes the need for improved methods of preservation of blood, for improved plasma expanders, and for a re-evaluation of the minimum amount of whole blood required for resuscitation. Plastic blood containers, given preliminary evaluation in Korea, appear highly promising and are being constantly improved. They could materially alleviate part of the logistic problem described.

Conclusion

In each overseas major command plans must exist for immediate implementation of a blood program. This should include designation of a specific unit as responsible for the planning and emergency operation of this activity including estimation of requirements, and methods of collection, storage, and distribution.

For planning purposes, 0.9 units of blood per WIA per day times the number of days required to replenish stocks appears to be a reasonable supply level for an overseas theater. Whether this amount can be met will depend on the size of the military operation, education in the use of blood substitutes, and overall national requirements.

With a perishable commodity such as blood plus the suddenness with which daily requirements may vary, local resources should be developed to a maximum degree.

The distribution system for blood should be based on the most direct supply feasible with a minimum number of storage centers.

A continuing program in professional education and supervision of the use of blood and plasma expanders should exist within the theater.

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UNITED COMMUNITY CAMPAIGNS
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Appetite and Acclimatization to High Altitude*

(With one chart)

By

EDWARD LEB. GRAY, PH.D.

LOSS OF appetite together with concurrent weight loss is regularly observed at high altitudes. Weight loss is apparent at about 9000 feet and proceeds with greater rapidity as higher altitudes are reached.[1,2,3] Barcroft[4] pointed out that on the Cerro de Pasco expedition of 1921-22, one of the most notable features was the weight loss which was experienced by all the party, one member going from 155 to 131 pounds in 27 days. The loss is even more marked at higher altitudes. The members of the 1924 Mount Everest expedition lost from 21 to 28 pounds.[5] The climbers of the German expedition of 1931 lost 30 to 50 pounds in from 6 to 7 weeks at elevations above 20,000 feet.[6] The mean weight loss of the ten members of the International High Altitude Expedition to Chile which reached 20,000 feet was 18 pounds.[7] Furthermore, Hurtado[8] has reported that Andean native children are significantly underweight when compared with children of native stock raised at sea-level.

This loss has been attributed in part to dehydration[9,10] despite the fact that loss of appetite is regularly observed.[1,10] Furthermore, subjects exposed to simulated altitudes in decompression chambers for extended periods, even though the exposure be interrupted, exhibit this same weight loss.[11,12]

In the winter of 1943, a survey was made of the nutritional status of troops at Camp Hale, Colorado. The altitude of this camp was slightly over 9000 feet while the maneuver area ranged from 10,000 to 13,000 feet so that a good percentage of the soldiers' time was spent above 10,000 feet. Based on experience in Alaska, where it was estimated that troops required more food than that provided by the ration used in the average post in the United States, a ration and a tenth was issued to troops of the Mountain Training Center, making the caloric content about 4500 calories, one ration providing about 4100 calories. That 4500 calories or 1 1/10 ration is not an unrealistic figure is shown by the fact that troops both at Ft. Warren and Camp Carson where the groups surveyed were undergoing intensive training consumed this much even in relatively warm weather while the acclimatized MTC troops (601 Field Artillery) consumed substantially more. Moreover the correctness of this supplement for severe winter weather has been confirmed.[13]

Eight companies of the troops in training were surveyed. A brief account is given of the personnel of each company together with their activities.

The 87th Infantry Regiment had been training at Camp Hale about one month. Companies B and C were on the regular mountain training routine, with an occasional day in the mountains. Companies F and G had been on maneuvers from February 3 to 13, 1943. After coming off maneuvers a majority of these men were permitted to go on a 2 day pass. The survey of these companies began the day after the men returned after having had an opportunity to satisfy their desires for different foods. During the survey all troops spent one-half of each day on skis with packs; the other half day was devoted to rifle practice, maneuvering on snowshoes, or other military activity. Each company had a certain small number of men unsuitable for mountain work. These men were awaiting transfer and did not participate in the training program.

* This paper is based on data obtained while the author was serving as a Nutrition Officer, Army of the United States.

The troops of the 601st Field Artillery (pack) had been transferred to Camp Hale, from Camp Carson, Colorado (elevation 6000 feet) about the first of November. These troops were in training at Camp Carson during the summer months of 1942, including maneuvers on Cheyenne Mountain, elevation 9000 feet.

The troops of the 99th Infantry Battalion (sep) were composed of men of Scandinavian birth or descent. Many were ex-sailors. The battalion was activated on 15 August 1942 at Camp Ripley, Minnesota, moved to Ft. Snelling, Minnesota in October 1942 and to Camp Hale 19 December 1942. A number of these men were on limited service or recruits. These troops maneuvered in the mountains from Tuesday morning until Friday morning of each week. The survey covered the interval from Friday to Tuesday morning.

Method

The survey was conducted using the standard Army procedure as outlined by Berryman et al.[14,15] Briefly this consisted in making an inventory of food on hand before and after the survey period. The difference in the two inventories plus the amount of food received during the survey divided by the number of men partaking of the mess gave average figures for the consumption of a man for one day. Estimates of edible garbage were deducted from this figure. By edible garbage is meant items of food which were prepared but later discarded. Plate scrapings such as uneaten bread were included. The survey was conducted in February 1943, a two week period covering the entire collection of data.

Results

Of the eight messes whose men were undergoing the mountain training, only the two with longest training and acclimatization consumed about the quantity issued according to the Mountain Training Center menu. These two messes, both of the 601st Field Artillery (pack) were different from the other organizations surveyed in that there were no recruits or men on limited service and that all men had been in training at an altitude of 6000 feet (Camp Carson) between July and the date transferred to Camp Hale. The high level of consumption of total food and calorie intake was due largely to the increased consumption of grain products and potatoes. The increase of grain products was undoubtedly due to an increase in bread consumption since the men had sandwich lunches while on the rifle range and on long ski hikes.

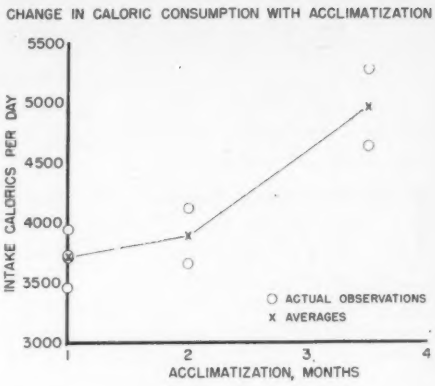

Fig. 1.

The six other Mountain Training Center organizations consumed 10 to 20 per cent less than the augmented ration. These figures are supported by the fact that the regimental supply sergeant had been returning subsistence supplies to the Quartermaster ration supply point. The comparison of food consumed to length of acclimatization is shown in Figure 1.

Table I gives the caloric consumption of the Mountain Training Center in the order of arrival at Camp Hale. Calories alone are given in the tables as the diets were deemed adequate in all respects. Table II shows a comparison of the figures obtained at Camp Hale with those of tactical troops at Camp Carson, Colorado Springs, elevation 6000 feet and Fort Warren, Cheyenne, Wyoming, elevation 6000 feet. At all three posts the messes surveyed were about the same strength, i.e., approximately 250 men per mess. In addition are figures obtained by Johnson and others[16] for troops in the South

TABLE I

CALORIC INTAKE OF MOUNTAIN TRAINING CENTER TROOPS AT CAMP HALE, COLO., ALTITUDE 9,000 FEET

Unit	Arrival Time	Calories							
		Total Eaten (cal/man)	Per Cent of Issue (4500 cal)	Carbohydrate	Per Cent	Fat	Per Cent	Protein	Per Cent
601st F.A. (Pack)	1 Nov. 1952								
Hq. Co.		4635	102.8	1885	40.7	2190	47.2	560	12.1
Co. A		5274	117.3	2490	47.2	2098	39.7	688	13.0
99th Inf. Bn. (Sep)	19 Dec. 1942								
Co. A		3647	81.2	1566	42.8	1629	44.7	452	12.5
Co. B		4100	91.1	1633	39.9	1919	46.8	548	13.4
87th Mtn. Inf.	15 Jan. 1943								
Co. B		3450	76.7	1198	34.7	1748	50.6	504	14.6
Co. C		3725	82.8	1421	36.1	1808	48.5	496	13.2
Co. F		3693	82.0	1519	41.2	1682	45.7	492	13.3
Co. G		3932	87.4	1633	41.6	1817	46.2	492	12.5

Pacific and those of 455 messes in training in the United States.[17] The units at Camp Carson were part of the 89th Infantry Division which was formally activated while the studies there were in progress. Those at Fort Warren were in the QM RTC, where the men in the messes being investigated were undergoing basic training. Thus in both cases the survey took place shortly after the arrival of the men.

The figures from the Pacific include messes from Hawaii, Guadalcanal, Iwo Jima, and Luzon. In the case of Luzon the subjects came from a regiment of the 38th Infantry Division which had been in continuous contact with the enemy for 4 1/2 months and were surveyed within 36 hours after withdrawals from the front lines. In spite of the difference in the distance from combat, the figures were so similar that it

TABLE II

COMPARISON OF CALORIC INTAKE OF TROOPS IN DIFFERENT ENVIRONMENTS

Location	Calories							
	Total Eaten (cal. man)	Per Cent of Issue	Carbohydrate	Per Cent	Fat	Per Cent	Protein	Per Cent
Camp Hale Unacclimatized	3758	83.4	1495	39.8	1767	46.9	497	13.2
Camp Hale Acclimatized	4956	110.0	2188	44.1	2144	43.4	624	12.6
Camp Carson, Colo. Altitude 6000 ft.	4368	117.7	2024	44.3	1881	43.1	532	12.2
Fort Warren, Wyo. Altitude 6000 ft.	4440	110.2	2052	46.2	1845	41.6	500	11.3
U. S. Training Camps	3790	95.0*	1636	43.3	1602	42.4	500	13.2
South Pacific	3400		1832	53.9	1125	33.1	440	12.9

* Approximate figure based on 4000 calories as the average issue.

was thought advisable to combine them both for clarity and conciseness. The figures for the 455 messes in U. S. Training Camps[17] were gathered by Nutrition Officers from 1942 to 1945 and while preponderantly ground combat troops, do contain housekeeping units as well.

As for the troops at Camp Hale, the quantity of meat consumed was approximately the same as the regular issue and ten percent less than the Mountain Training Center issue. The average consumption of milk products was 19 percent less than the issue of the Mountain Troops. All units except those of the 601st Field Artillery consumed less than the issue. Failure to use the evaporated milk issued accounted for the low intake of total milk products. And finally, an average of only 70 percent of the grain products were being consumed. Naturally this under-consumption resulted in an accumulation of certain food items in the supply room. The high consumption of the messes of the 601st Field Artillery probably lies in the fact that the men had become acclimatized.

Discussion

Weight loss during acclimatization to high altitude is a universal observation. The phenomenon first appears at about 9000 feet and increases as the altitude becomes greater. This loss in weight appears to be due to a reduction in appetite. Although the appetite of the MTC personnel was keen, satiety was quickly reached. While some soldiers were unable to become acclimatized and had to be sent elsewhere, this number was relatively small. The bulk of the men appeared to adapt readily to their new environment and to enjoy their surroundings. The messes were good, there being no complaints on that score. There was no noticeable evidence of mountain sickness as described by Bert[18] and by Monge.[19,20] The station hospital's roster was made up principally of those who had respiratory infections or sprains and fractures obtained while skiing.

An inspection of Table I shows that when the troops were subjected to high altitudes for a period sufficiently long to become acclimatized, the food consumption increased enough to maintain weight. The ability to adapt to high altitudes varies greatly with the altitude and the individual. At this altitude range of 9,000 to 13,000 feet some individuals have little or no ability to make this adjustment.[20,10] A few had to be transferred to posts at lower altitudes because of their inability to do this. Unfortunately, no accurate estimate for the time necessary for acclimatization could be arrived at from these studies. On the basis of the admittedly inadequate figures obtained from the 601st Field Artillery it appeared to take from 3-6 months.

No attempt will be made to outline a theory to account for the fall in appetite and as a consequence the reduced food intake. However, inspection of Table II shows that the type of food eaten at Camp Hale as contrasted with that found by Johnson in the South Pacific region and from troops in training in the United States is sufficiently different to warrant some speculation. In all the various studies listed in the tables the protein intake remained substantially the same. In the diet of the unacclimatized soldier, the percentage of carbohydrate was low, while the fat was relatively high. This was borne out by the fact that a good deal of food rich in carbohydrate in one form or another was returned unused to the Quartermaster. On the other hand the troops in the tropical climate used relatively large percentages of carbohydrate and low percentages of fat. The troops in training throughout the U. S. and the messes surveyed at Camp Carson and Fort Warren were intermediate to these two groups.

It is generally recognized that the hypothalamus plays a major role in the regulation of appetite.[21,22] This regulating mechanism has been designated *the appestat by* Jolliffe.[22] Mayer[23] considers that the regulating impulse to the hypothalamus is the amount of carbohydrate in the blood of the central nervous system. This concept could be used to explain the loss of appetite at high altitude. Our data show that there is a lowering

in the relative intake of carbohydrate in unacclimatized soldiers at high altitudes. Lack of oxygen and too easy satiety appear to be linked as the lowered appetite returns to normal when other signs of acclimatization occur. If oxygen want is a limiting factor in brain metabolism and the level of carbohydrate within the central nervous system is the controlling appetite factor, then the satiety signal to the hypothalamus would be set off prematurely and loss in weight would ensue.

Summary and Conclusions

A nutrition survey of troops in training at Camp Hale, altitude range 9000 to 13,000 feet, showed that until acclimatization occurred, the men did not eat enough calories to sustain body weight, a result to be expected from earlier observations on men at high altitudes. While there was no evidence of anorexia, satiety is apparently arrived at too soon. That the caloric deficiency was largely carbohydrate in nature is shown by the low percentage of carbohydrate eaten and by the fact that the rations waived or returned to the Quartermaster were principally carbohydrate. A possible mechanism relating weight loss to anoxia has been discussed.

Acknowledgment

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Rheumatoid Arthritis and Spondylitis

The Clinical History and the Pathological Changes After Twenty Years of Disability

By

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(With five illustrations)

A FULL length skeleton has been on display in the Medical Museum of the Armed Forces Institute of Pathology, formerly the Army Medical Museum, for over 30 years. It is of a man seated in a kitchen chair, with solid bony ankylosis of every joint, including those of the jaws, spine, ribs, hips, knees and ankles. The upper extremities have been lost and substitutes have taken the place of the originals. This man, a private in the U. S. Army, suffered such severe rheumatoid arthritis and was helpless so long that he volunteered to give his body to the museum in the hope that a study of his disease might help other sufferers. It is the purpose of this article to tell the story of this man who died over 30 years ago.

HISTORY

The patient was born September 16, 1882 in Lansing, Michigan. His father was a native of France and his mother, of Germany. His mother died in childbirth at the age of 41, but the father was recorded as living and well at the age of 72. The date and the cause of the father's death are not known. One brother and two sisters were living at the time of death. He had had measles, mumps, chicken-pox and whooping cough as a child and scarlet fever at the age of twelve.

Although official records are not available, information from friends and relatives indicates that he enlisted in the Army at the age of 17, in 1899. This was just after the Spanish-American War and he was sent to the Philippine Islands where he remained until 1903. He was discharged from the Army upon his return to the United States and worked as a machinist at the Olds Motor Works in Lansing, Michigan. In July 1904, he reenlisted in the Army and was sent to duty with the 15th Cavalry Regiment at Fort Ethan Allen, Vermont. This enlistment record is available and records his weight as 138 pounds and his height as 5 feet 7½ inches. His teeth were all present. A statement is made that he had gonorrhea the previous year. About two months after his enlistment, following a drill in a cold rain, joint pains developed and he had difficulty in dismounting from his horse. He was admitted the next day, September 20th, to the Fort Ethan Allen hospital where he remained until November 17, when he was transferred to the Army and Navy General Hospital at Hot Springs, Arkansas. His transfer diagnosis was "Rheumatism chronic, articular, affecting both hips, knees and ankle joints, the right elbow and the right third metatarsal-phalangeal joints." The first joint to swell was the left ankle, followed in order by the right ankle, right knee and both shoulders.

The history taken on admission to the Army and Navy General Hospital recorded that his brother had rheumatism and it also mentioned that he had had rheumatism and malaria seven years before, although rheumatism was specifically denied on the 1904 enlistment record. The physical examina-

tion on admission showed enlarged inguinal glands and swelling, tenderness and stiffness in the metatarsal-phalangeal joints of both feet, and in the right ankle and knee.

His treatment at Army and Navy General Hospital included sodium salicylate, potassium iodide, Fowler's solution and quinine, in addition to hydrotherapy. The record had little to say of the patient's progress in the hospital, but any improvement must have been limited since he was discharged from the hospital and from the Army on July 4, 1905, with a Certificate of Disability.

He was readmitted to Army and Navy General Hospital on December 15, 1909, and the record on this admission indicated that since his discharge in 1905, he had had chronic joint pains chiefly in the knees and ankles. In June 1909 his condition had become worse and since September he had not been able to walk. Motion in the knee joints was limited to about one-third of normal. The hips, knees, ankles and feet were swollen and tender. He weighed 111 pounds at this time. In April 1910, both knee joints and the right ankle were injected with 0.5 per cent solution of formalin in glycerin but without any beneficial effect. Treatment on this admission included potassium iodide and tincture of colchicum. Opiates were required for pain. He left the hospital unimproved in May 1910 and was admitted the same month to the hospital at the United States Soldiers Home in Washington, D.C.

His admission examination at the Soldiers Home recorded his weight as 104 pounds and he was described as emaciated in appearance. The knees showed ankylosis with the legs flexed at right angles to the thigh. There was also limitation of motion in both hip joints and in the left elbow joint. The left wrist joint, the ankle and the joints of the right foot were tender and swollen.

His condition grew progressively worse and in December of 1910 an appendicostomy was performed. The appendix was exposed through a gridiron incision and the tip was brought out through a stab wound. Four days later, the tip was cut off and the colon was irrigated through this opening with 1,000 cc. physiological salt solution twice daily. The colon was reported as packed with hard feces when this treatment was begun. He was having intense pain in the right hip and knee at this time. Four days after irrigations were started he was feeling better than he had for months. His appetite was greatly improved and he slept well.

Except for a record of hemoglobin 70 per cent and red blood cell count of 2,880,000 on May 4, 1911, there is no note from 1910 until March 19, 1913, when it was recorded that he had been gradually getting worse and that he was able to feed himself for the last time on August 3, 1912.

In the note for March 19, 1913, it was stated that he could open the lower jaw partially, move the neck slightly from side to side, and there was slight motion of both shoulders, both elbows, the fingers of the right hand and very slight motion of the fingers of the left hand. There was practically no motion in the lower extremities. The joints were not tender, showed no evidence of inflammation and were not greatly enlarged. A rough mitral systolic murmur was transmitted to the left axilla. The aortic and pulmonic second sounds were accentuated.

In December 1913, his condition was practically unchanged. He was having occasional attacks of joint pain, especially in the left jaw, and he was fearful that it would become stiff even though no change had been noted in six months. He could still open his mouth about three quarters of an inch. At this time the patient was given a special chair in which he could sit comfortably for hours at a time and in which he could be moved about. In his chair he was even able to attend the movies.

A history was now obtained of 20 to 30 attacks of tonsillitis during the development of the arthritis. With these attacks of tonsillitis his joints flared up. To quote the record, "It seems that the tonsils were the port of entry for the infection," so they were removed January 27, 1914, by Major Halloran.

In March 1914, the patient confessed to

receiving unrecorded doses of morphine sulfate gr III twice a day. The dose was cut to half a grain twice a day which kept him happy.

Examination on November 18, 1915 resulted in the following entry: "Practically all joints in the body are ankylosed except the shoulder (right) and the mandibular joints. The right shoulder is moved a little by the patient, the left shoulder very slightly. The fourth and little fingers of the right hand and the left wrist can be moved slightly. All the extremities are deformed. The elbow joints are ankylosed in the flexed position across his body. Both hips are ankylosed in the flexed position, angle of about 90° and are inclined toward the right. Knees flexed at angle of about 90°. Feet are swollen. Skin scaly and hard. Toe nails deformed; no tenderness. Muscles of entire body are atrophied."

On December 10, 1920, a note stated that jaw motion was further decreased and on December 29 that the jaw was ankylosed. On February 4, 1921, four front teeth were removed to facilitate feeding.

On April 17, 1924, according to an entry on the history, an effort was made to reduce the dose of morphine but the patient complained bitterly of pain.

Death occurred at 7:55 a.m. on September 10, 1925, when the patient was 43 years of age.

A photostat of his will drawn on June 9, 1916, and signed by his mark was filed for probate October 1, 1925. It provided, "Item #1—I direct that after my decease that my body be given to the Curator, Army Medical Museum of Washington, D.C."

It then provided that all his property everywhere be bequeathed his brother and two sisters to share alike.

No petition for probate or administration of the will has ever been filed, according to a letter from Register of Wills written December 18, 1953.

A previous agreement notarized October 21, 1921, by Robert Burg, N.P. reads as follows: "I, . . . being of sound and normal mind do hereby consent at my death to have an autopsy performed on my body and request that my body, the organs or any part thereof as may be desired for any use or purpose of the Army Medical Museum shall be deposited therein." Signed by his mark. A hand written note states "This was entirely unsolicited and his own idea. G. R. Callender."

On September 14, 1925, his sister signed a statement saying she, her sister and brother, all understood and wished to carry out their brother's wishes.

Autopsy

The autopsy was performed at the Soldiers Home Hospital by Major G. R. Callender (later Brigadier-General) on September 15, 1925. The body was described as emaciated, with subcutaneous fat practically absent and with severe muscular atrophy causing the joints to appear prominent. The thighs were flexed on the abdomen at about right angles and firmly ankylosed. Both legs were flexed on the thighs at about 50 degrees and there was no motion in the knee joints. All other joints also showed ankylosis with the exception of the left sternoclavicular, both acromio-clavicular joints and the right 2nd, 3rd, 4th and 5th and left 4th and 5th metacarpal-phalangeal joints. These metacarpal-phalangeal joints showed abnormal mobility probably due to extensive bone absorption. These were typical "flail" joints. Fragility of the bones was indicated by fracturing of the right humerus when an attempt was made to abduct the arm. The condition of the body and the deformities of the joints are well shown in a photograph taken after death (Fig. 1).

Aside from the joint changes, the autopsy revealed no important lesions. Purulent bronchitis and early bronchopneumonia were evident. The liver showed chronic passive congestion and moderate fatty metamorphosis of liver cells especially in central areas. The arterioles of the spleen were thickened and hyalinized and similar but less marked vascular changes were noted in the kidneys. The cellularity of some glomerular tufts was increased and degenerative

FIG. 1. Photograph taken after death. The emaciation is extreme. The neck and back are in normal position. There is flexion deformity of about 90 degrees of both hips and the knees are flexed at about 50 degrees. There is plantar flexion of both ankles. Both arms are held close to the body and the elbows are at right angles. The right forearm, wrist, hand and fingers are in a straight line. There is palmar flexion of the left wrist, marked hyper-extension of the proximal phalanges at the metacarpal-phalangeal joints and acute flexion of the middle phalanges at the proximal interphalangeal joints. AFIP Negative Number 41-983.

changes had taken place in the epithelium of convoluted tubules, but for the most part the kidneys appeared normal. The adrenal cortices contained abundant lipid. The thyroid follicles varied considerably in size, but all were filled with colloid and the lining epithelium was low, indicating an inactive gland.

These minimal changes at autopsy made it difficult to determine the cause of death. The pneumonia was terminal. Opiates and poor nutrition were no doubt factors.

SKELETON

The skeleton was prepared and mounted at the Army Medical Museum and is still on display although bones of the upper extremities including both scapulae and the right clavicle have been replaced. The costal cartilage portions of the ribs, all the left metatarsal bones and phalanges with the exception of the first, and the skull cap have also been replaced.

The skeleton is light in weight due to demineralization, and all the original joints are the seat of firm bony ankylosis. Osteoporosis is prominent in the lumbar vertebrae, the sacral alae and in the upper and lower ends of the femora, tibiae and fibulae.

The skull cap is missing, but suture lines at the base of the skull appear normal. There is bony ankylosis of the temporomandibular

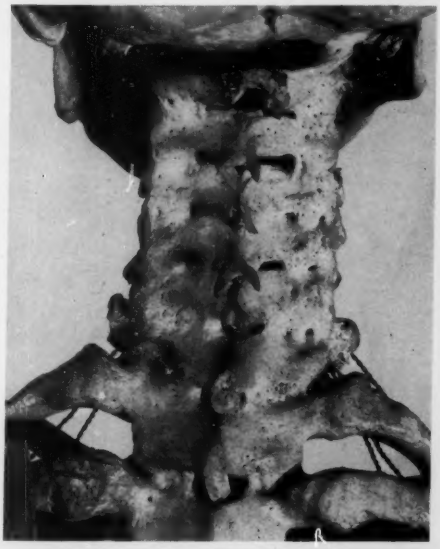

FIG. 2. Bony ankylosis cervical vertebrae, showing complete obliteration of the intervertebral joints and the first two costo-vertebral joints. There is also ossification of the ligamenta flava obliterating the normal interlaminar spaces. AFIP Negative Number 54-23389.

joints and all teeth are missing with the exception of the 12 molars which are well preserved.

The articular surfaces of the atlas are fused to the occiput and to the axis. The posterior arch, which is markedly thinned, is fused to the laminae of the axis. The odontoid process of the axis is fused to the anterior arch of the atlas.

The articular surfaces of all cervical,

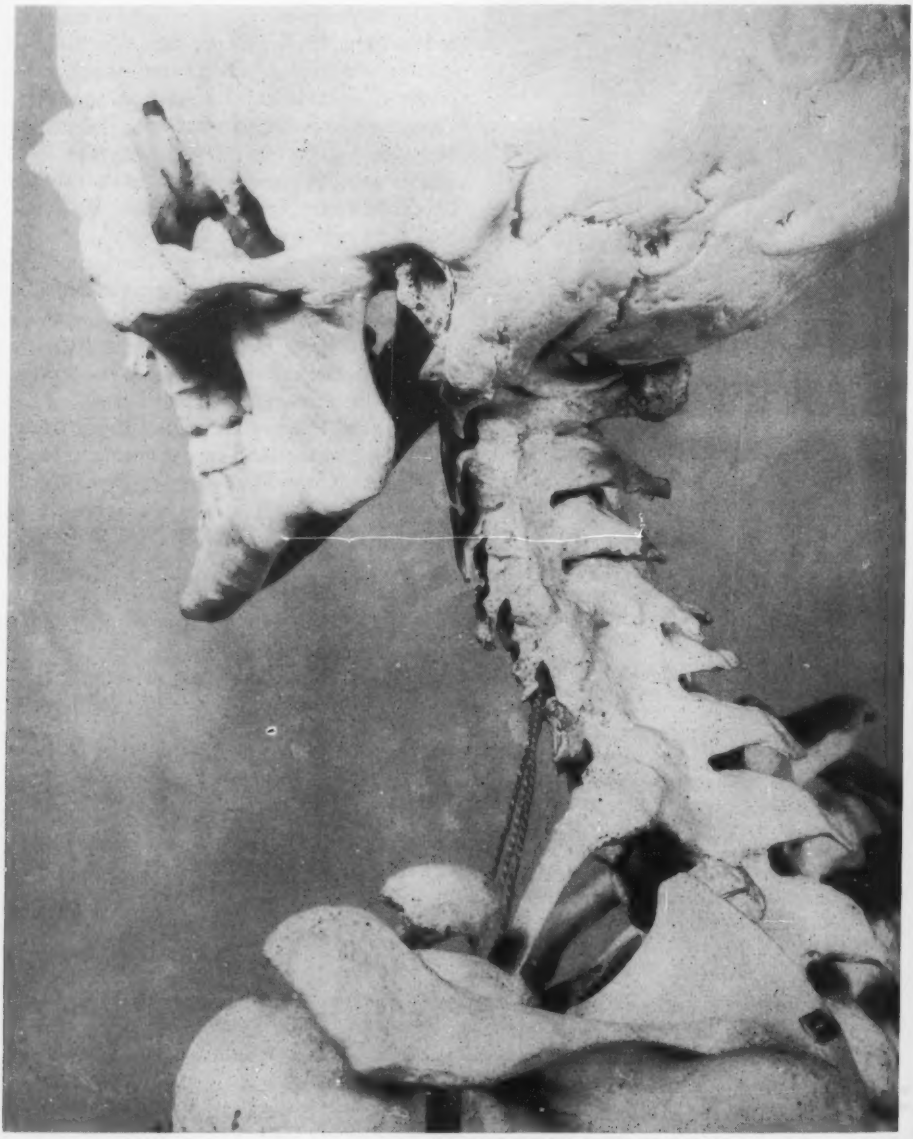

FIG. 3. Complete ankylosis of the temporo-mandibular joint with massive bone formation. Ossification of intervertebral joints and intervertebral discs and of some interspinal ligaments. AFIP Negative Number 54-3127.

thoracic and lumbar vertebrae show bony ankylosis and there is bony union between the laminae of the 4th, 5th, 6th, and 7th cervical vertebrae and all thoracic vertebrae due to ossification of the ligamenta flava. Bony union exists in varying degree between the bodies of the 2nd to the 6th cervical vertebrae, inclusive, and between all thoracic and lumbar vertebrae, as the result of calcification of the long ligaments of the spine. This union is most nearly complete with respect to the thoracic vertebrae. Only the body of the 7th cervical vertebra fails to show some degree of bony union. The transverse and intervertebral foramina are of normal size. Osteoporosis is marked in the lumbar vertebrae, particularly in the laminae and in the spinous and transverse processes. The sacral segments are fused and the coccyx is missing (Figs. 2 and 3). There is bony ankylosis of the sacro-iliac joints with severe osteoporosis of the sacral alae.

All costo-vertebral articulations are completely obliterated by bony ankylosis. The anterior portions of the ribs have been replaced.

FIG. 4. A detailed view of the left hip joint. The joint space is completely obliterated by bony growth. The joint is ankylosed at 90 degrees flexion and 30 degrees adduction. AFIP Negative Number 54-3129.

FIG. 5. A detailed view of the left knee joint showing fusion of the femur and tibia by bony ankylosis. This is well shown in the lateral condyle and is also present on the medial condyle. Similar fusion is seen between the tibia and fibula. The patella is firmly fused with the lower end of the femur between the condyles. The trabeculations seen in the upper end of the tibia where the cortex has been lost are fine and delicate indicating a severe degree of osteoporosis. AFIP Negative Number 54-3126.

The heads of the femora are fused to the acetabula around the entire circumference and severe osteoporosis is seen in the heads of the femora and the bones forming the acetabula (Fig. 4). There is bony ankylosis of the tibiae to the femora and of the fibulae to the tibiae at both the knee and ankle joints. The patellae are joined to the femora by bony fusion. Bony union of the tibia to the astragalus is seen in both ankle joints. Osteoporosis is prominent in the condyles of the femora and of the tibiae and in the heads of the fibulae and the lower ends of the tibiae and fibulae (Fig. 5). There is bony ankylosis between the tarsal bones and of all remaining metatarsal and phalangeal joints (Fig. 6).

DISCUSSION

Much desirable information about this man is missing. No trace of living relatives or descendants has been discovered despite

FIG. 6. A photograph of the right foot shows fusion of the lower ends of the tibia and fibula with the tarsal bones and of the tarsal bones with each other and with the metatarsals. There is fusion of the first, third and fourth proximal phalanges with the corresponding metatarsals and fusion between the phalanges of the first and of the third toes. All phalanges of the second and fifth toes are missing together with the middle and distal phalanges of the fourth toe. The fifth metatarsal bone shows absorption of the distal end forming a typical, pointed "candy stick" deformity. AFIP Negative Number 54-3130.

inquiries at the Departments of Vital Statistics of Ohio and Michigan and newspaper advertising. Even inquiries among some of the Army officers who signed his chart revealed no clue as to his friends, personality, temperament, philosophy, or family relations. The fact that he volunteered to bequeath his remains to the Army Medical Museum indicates an unusual sense of social responsibility, rare in a man of his apparent education and social background. It proves that even in his day an occasional voice was raised in protest against the ignorance concerning the neglect of chronic arthritis.

The photograph on display with the skeleton, taken after death, clearly illustrates the severe deformity and the helplessness of the man. Examination of the skeleton shows almost the entire joint system to have been transformed into solid bone.

Certain facts related to the man's disease are worthy of emphasis. The onset of his first illness while he was on horseback, during drill, in the rain, is dramatic. The story of repeated attacks of tonsillitis before, during and after the onset, naturally led to tonsillectomy in 1914. It is not surprising that this operation was ineffective since extensive ankylosis already existed. The appendicostomy with irrigation of the colon seemed to produce some relief, possibly more from the anesthetic than from the removal of hardened masses of feces. The anemia is understandable as a common accompaniment of rheumatoid arthritis, exaggerated in this patient by inability to feed himself and to masticate his food.

Addiction in a man in this condition, living in a Soldiers Home as he did, is not surprising. His capacity for self entertainment and enjoyment of life was so limited that any attendant might easily have been tempted to accede to his wishes.

The authors personally believe that the Neisserian infection was incidental, having no connection with the chronic disease.

CONCLUSION

A veteran of the Philippine campaign, during Army service, had chronic progressive ankylosing rheumatoid arthritis, and spondylitis severe enough to render him completely helpless, so that he spent the last 15 years of his life in the Soldiers Home. He was so impressed with the significance of his disease and the inability of the medical profession to comprehend it and to cope with it, that he gave his body voluntarily to the Army Medical Museum for study. His skeleton, completely ankylosed, has been on display in the Medical Museum of the Armed Forces Institute of Pathology ever since his death.

Amputee Rehabilitation and Modern Artificial Limbs

By
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(With six illustrations)

DURING the past 11 years, the Navy Amputee Rehabilitation Center located at the U. S. Naval Hospital, Oakland, California, has treated over 7,000 amputees. The majority of these cases have been battle casualties from World War II and the recent Korean conflict, including a large number of cases resulting from frostbite. Many other types of cases: veterans of former wars, operational and industrial accidents, amputation caused by motor vehicle mishaps, amputations resulting from vascular diseases and bone tumors have been treated. Dependent children, congenital amputees and female amputees of both Service and dependent personnel have also passed through the Navy Center and have been successfully rehabilitated.

Patients in all groups, from infants to those over 90 years of age, have received rehabilitation treatment. Every type of case, from partial amputation of digits to hemipelvectomies and shoulder girdle amputation, besides all types of multiple amputations including quadrilaterals, have been fitted and successfully trained in the use of artificial limbs.

Since the establishment of the Center early in World War II, it was recognized that a full rounded program, employing all the resources of medical science and the various allied specialties including physical therapy, occupational therapy and vocational training were necessary to be utilized for proper and total rehabilitation. This has been conducted under a seven-point program directed toward the complete rehabilitation of the individual patient. The ultimate goal of the handicapped is proper job placement. An employed rehabilitated individual assumes the position of being a contributor and an asset rather than a liability and dependent upon charity for a livelihood. From an economic viewpoint, rehabilitation represents a sound investment. Instead of being a burden upon the taxpayer, the employed handicapped individual becomes a taxpayer.

The first point in the rehabilitation program is ADEQUATE MEDICAL AND SURGICAL CARE. On the average, two surgical operations are required to prepare the amputated stump for fitting with a prosthesis. Surgical procedures including primarily closed amputations, open flap amputations, skin grafts, plastic surgery procedures including cineplasty, amputations of stumps and revisions. Due to modern surgical techniques and anesthetics; chemotherapy and the massive use of whole blood, the mortality rate from amputation surgery at this activity has been zero. Mortality rates resulting from amputation surgery, as reported in medical literature from other hospitals, has been from 2% to as high as over 50% reported in the 19th century prior to the era of aseptic surgery. Experience gained in treating over 500 frostbite cases early in the Korean War, has shown that conservative and delayed amputation when confronted with dry gangrene is the treatment of choice. Only after nature has clearly demarcated the amputation zone, should the surgeon then fashion the stump from the remaining viable tissue. In both the upper and lower extremities, the optional level for the site of amputation has become antiquated. *The surgeon today preserves stump length whenever viable soft tissue is present.* Due to the improvements in artificial limbs, special types of prostheses can be fitted to long stumps. The advantage of long lever action, preserva-

FIG. 1. Physical therapy employed in the physical reconditioning of the stump.

tion of muscle length gives a long stump a decided advantage over a short stump from the standpoint of function. The most common serious complication is post-operative hematoma in the stump.

The second point is PRE-PROSTHETIC PHYSICAL RECONDITIONING OF THE ENTIRE BODY AND STUMP (Fig. 1). In the immediate post-operative stage, proper bed posture, muscle exercise and early ambulation are employed. This counteracts contractures, improves general well being, strengthens the body and helps overcome the depressive mental state that is often prevalent following amputation surgery. As soon as sutures are removed, a more active physical reconditioning program is individually prescribed together with more intense stump exercises. The stump is shrunk by means of an elastic bandage in order to remove the post-operative edema.

The third point is the FITTING WITH A MODERN, COMFORTABLE PROSTHESIS (Fig. 2). As soon as the surgical incision is healed, the patient is fitted with a suitable prosthesis. Fittings are done on the average of three to six weeks post-operatively and although the stump is rapidly undergoing shrinkage, adjustments and new sockets are provided in order to maintain the fit of the rapidly changing stump size. Light-weight prosthetic limbs with functional joints and soft flexible plastic sockets allow the amputee to wear and utilize the prosthesis at an early post-operative stage.

The fourth step is the TRAINING IN THE USE OF THE ARTIFICIAL LIMB (Fig. 3). Walking training is provided by the Physical Therapy Department and supervision and instruction is given by a qualified teacher who is himself an amputee. The training program is individually prescribed for the patient from the first procedures, as weight-bearing, correct body posture, swinging the prosthesis and walking between bars, to the more advanced training on ramps, stairs, obstacle course, dancing and the proper operation of an automobile. Arm cases are trained with the artificial limbs in the Occupational Therapy Department utilizing an amputee instructor who can demonstrate to the patients the use of his own

FIG. 2. Limb fitting with a modern, comfortable prosthesis.

artificial limb. The patient is taught to use both the hook and artificial hand and is trained in the use of the prosthesis in practical needs as dressing, personal care, eating, typing and in forms of work and recreation. Ward rounds and weekly amputee clinics are held by the joint staff where the amputees demonstrate their progress and efficiency with their artificial limbs. The training is culminated by an achievement test which each patient performs according to his remaining ability.

The fifth point is PSYCHOLOGICAL ADJUSTMENT AND AIDS TO THE HANDICAPPED. Psychological conditioning and the patients acceptance and adjustment to his handicap are important milestones in the program of rehabilitation. Whenever possible, a presurgical conference and explanations of the reasons for surgery and a demonstration by an amputee using the type of limb that will be provided are given. Amputee cases are hospitalized in an amputee ward where they have the opportunity of viewing other amputees in the various stages of their program. Motion pictures of the complete program are shown to the amputee post-operatively in order that he will fully understand what he may expect and accomplish in the rehabilitation program. Group therapy lectures (Fig. 4), where the patients can informally ask questions and discuss their individual problems are held. Throughout the entire program each member of the staff is constantly helping the patient individually gain confidence and adjust to his disability. Private discussions with the Medical Officer are held in order to render aid and explain the many and varied personal problems that may be troubling the amputee.

FIG. 4. Group therapy lectures.

FIG. 3. Walking training by a qualified teacher.

The sixth point is PRE-VOCATIONAL TRAINING AND EDUCATION. Aptitude testing and vocational counseling are given in order to determine the qualifications of the patient. Pre-vocational training may be given and started while the patient is still under hospitalization, or it may be inaugurated or continued through the auspices of the Veterans Administration or State Vocational Rehabilitation Service, after the patient is discharged from the sick list. Whenever feasible, the younger amputees are advised to continue their education through the university level for future preparation of their life's work.

The seventh and final point is PROPER JOB PLACEMENT (Fig. 5). Some amputees can return to their former employment and there are cases who can be successfully employed in their vocation, if the type of work is varied to their individual remaining ability. Employers are gradually recognizing that

FIG. 5. Successful employment.

the use of handicapped people, when employed in the right job, are a decided asset to their organization. Job placement may be procured directly upon discharge from the hospital or through the services of Government Employment agencies.

In conjunction with the rehabilitation treatment, a program of research and development on prosthetic devices is conducted at the Navy Amputation Center. The facilities for research and development work are ideally provided for in a center. Competent research on artificial limbs requires the services of specialized personnel including the physician, engineer, the limb fitter, personnel and facilities for training amputees. Careful evaluation of both patient and new prosthetic devices are needed and above all, a pool of clinical cases who can provide the practical testing of the artificial limb under complete field conditions. Research work on prosthetic devices is difficult and time-consuming for scientific evaluation of a given improvement in an artificial limb requires, at a minimum, 100 cases and a period of use of at least one year. The research program at the Amputation Center includes over 30 individual research projects on both artificial arms and legs. Techniques of fitting alignment including the various components on artificial arms and legs and the use of the latest metal alloys and plastics are studied (Fig. 6). The research at the Navy Center has especially stressed proper fitting of the stump, alignment of the limb, materials from which a comfortable socket can be fashioned, the development of functional type of joints, reduction of the total weight of the prosthesis, cosmetic appearance, durability and economy of prosthetic service. An armamentarium of prosthetic devices are required, including specialized and individually designed artificial limbs for complicated cases. Children need artificial limbs which have been designed for children. Factors of rapid growth in both size and shape must be taken into consideration. Cineplasty has its proper place for arm amputees and a cineplastic prosthesis is required for the efficient operation of the artificial arm. Examples of improved prosthetic devices are: The suction socket, soft flexible plastic socket, Navy plastic leg including the functional foot and ankle, the variable cadence knee joint, cosmetic cover for female legs, the plastic artificial hand, the functional elbow joints, the Navy Fitch arm for shoulder disarticulations and

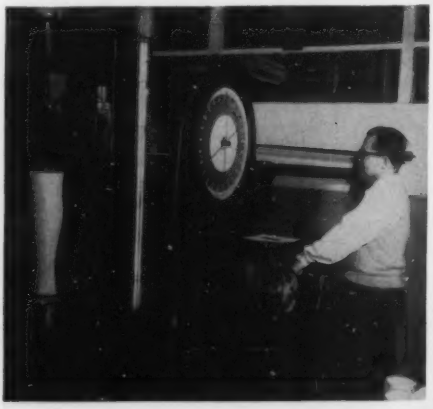


FIG. 6. Testing the strength of a plastic leg.

the cineplastic prosthesis for pectoralis and biceps muscles.

The results of proper rehabilitation and treatment are revealed in the analysis of a case study of 402 amputee patients, discharged from treatment for over three years. The survey revealed that only 24 cases (6%) are unemployed or not wearing their prosthesis. Of the successful group, 94% are in all types of occupations and vocations. Amputees are successfully employed in almost every type of work through the alphabetical listing from accountants to zoologists.

The results of amputee rehabilitation treatment reveals that when amputees participate in a comprehensive rehabilitation program, are fitted with comfortable, modern prostheses, receive pre-vocational training and have individual assistance in securing proper job placement, the majority of cases become participants and contribute to our way of life as effectively as any other group of citizens.

Heart Catastrophes

After reading recently of some of the directives that have been issued from high offices in the Pentagon on the preventive measures to avoid heart catastrophes we are wondering if there has been proper orientation in the matter of the examination of the heart and what might be expected from such an examination.

The death of extremely competent high ranking officers of the services is deplored, and every known means should be taken to prevent such loss. Many of these officers are under terrific pressure in the performance of their duties. Mental pressure undoubtedly plays a very important part in the development of some of the physical incapacities. The pressure exerted upon individuals to "do things yesterday" and the criticism leveled because they were not done at that time is having its toll. Of course there are other contributing factors, too, some of which might be mentioned: hastily eaten meals, lack of proper rest, lack of exercise, overweight, and probably a half-dozen other things which others can enumerate.

A recent order that "scrupulous care" be given to annual physical examinations should be taken as good advice but not admonition. An examination that is worth doing should be done carefully. There is one note, however, which we hope will be clear or if a little off tone because of misunderstanding should be cleared at once. That is, the belief which undoubtedly rests in many minds that a physical examination is a fortune telling affair, particularly with respect to cardiac emergencies.

Let us realize and let us let it be known widely that a physical examination, regardless of how well done or how complete it may be, even though done in the best clinic in the world, will not prevent nor foretell all cardiac emergencies. Special tests, whether given to admirals, generals, other military personnel, or civilians will not prevent nor predict all cardiac emergencies.

The limitations of the electrocardiograph, ballistocardiograph, x-ray, and other laboratory examinations, regardless of how complicated, or how simple, must be made known to all. Cardiologists simply bat a higher score by the use of these machines and methods added to their special knowledge; to expect these doctors to bat 1000 is unreasonable.

Eighth Army Medical Service

Part II—Concluded from October, 1955, Issue

By

LIEUT. COL. SPURGEON NEEL, M.C., U. S. Army

AIR EVACUATION

Air evacuation within Eighth Army is of two distinct types, both as to means and as to responsibility. Forward air evacuation, utilizing organic helicopters with medical pilots, is the responsibility of the Army Medical Service. Rearward evacuation, utilizing high performance aircraft, is the responsibility of the United States Air Force. Air evacuation of both types is exploited extensively in Korea due to the poor terrain and restricted rail and road net. It has contributed materially to the excellent record of the medical service in Korea, compensating in part for the drastic limitation in medical treatment facilities.

Forward air evacuation (between tactical units and surgical hospitals thence evacuation hospitals) is performed by helicopter ambulance detachments of the Army Medical Service. In Eighth Army these small cellular detachments have been organized into a provisional helicopter ambulance company with considerable improvement in administrative and operational procedures. Critical evaluation and analysis of this type of organization has conclusively shown that it is the preferable structure for exploiting the maximum advantages of helicopter evacuation and minimizing certain unavoidable limitations. A proposed T/O&E for a helicopter ambulance company, allocated field army on a basis of one per corps, has been staffed and submitted for consideration. Individual helicopter ambulance detachments are located at forward U. S. Army surgical hospitals, and individual sorties are under the dispatch control of appropriate corps surgeons. Though corps is not a logistical headquarters, it is believed that the corps surgeon should have full voice in the allocation of any critical medical means including helicopter evacuation. In combat there will not be enough available helicopter evacuation, and command priorities must be established at each level. Helicopter ambulance detachments are Eighth Army units, assigned to 30th Medical Group, attached to the 1st Helicopter Ambulance Company (Provisional), located on hospital compounds, and under the dispatch control of corps surgeons. While this sort of organizational structure may sound complicated, it has proven to be the most effective in this particular situation.

Helicopter evacuation is widely used in Korea due to the terrain and unusually poor roads. The transportability of any patient depends, not only upon his clinical condition, but also the distance he has to be moved and condition of the terrain over which he must be moved. The atraumatic nature of helicopter evacuation has made this mode of transportation of particular value in Korea. Patients not only reach their destination more rapidly, but also in much better condition. This has been especially true in the evacuation of hemorrhagic fever patients. Medical helicopters have proven inadequate for the magnitude of their mission. Supplemental evacuation is frequently necessary from the Army Transportation Corps, the Marine Corps and the Air Rescue Service. All Army evacuation requests are received by 30th Medical Group and relayed to supplemental evacuation agencies after it is determined that the mission is clearly beyond the capability of available Army Medical Service helicopters. All necessary arrangements are made by the Medical Service with the supporting agency merely flying individual sorties. Medical helicopters are not available in sufficient quantities for the en-

tire mission, and the type of helicopter provided (the Bell H-13 utility helicopter) is not suited for long hauls, low weather minimums or over-water flights. These limiting features do not indicate that the Army Medical Service is incapable of its accepted mission, but reflects the fact that additional and improved helicopters are required. Detailed recommendations with full justification have been submitted on all these points.

Air evacuation utilizing high performance aircraft of the United States Air Force is accomplished from several air fields located well forward in the army area. The majority of these operational air fields are located toward the army flank possessing the poorest rail and road net. An Army medical clearing and holding facility is located at each of these operational air fields. Whereas, during the interim period, emphasis has been placed on consolidation of medical units within a minimum number of compounds, care has been exercised to insure that, for each available aerial port, there is an operational Army clearing facility. This insures the ready availability of mass air evacuation and permits filling of hospitals and other treatment facilities to capacity without compromising their combat readiness.

USAF air evacuation is both intra-army and intra-theater. Air evacuation from Eighth Army to supporting medical installations in Japan and KComZ is normally from one well developed air field in the army maintenance area. Occasional air evacuations are performed from a second field to insure flexibility should the primary aerial port be interdicted due to the enemy action. Air evacuation to Japan as well as KComZ is coordinated by the 30th Medical Group within policies established by the army surgeon. Requirements are consolidated and transmitted to a forward detachment of a USAF medical evacuation group located at the air base in the maintenance area. The Army moves patients to the air field, provides holding facilities and in-flight meals, and loads patients into aircraft, at which point responsibility passes to the United States Air Force.

Evacuation Trends

Water evacuation during the interim period has been limited to patients aboard USN hospital ships when such vessels are rotated off the shore of Korea. Should hostilities resume, extensive use of water evacuation will probably become necessary from one flank of the army. Evacuations from Eighth Army, particularly as apply to more serious cases, have normally been to Japan. KComZ has no general hospitals and the professional and holding potential of its station hospitals closely approximates that of Eighth Army. At this writing, consideration is being given to increasing the holding policy of KComZ thus reducing requirements for evacuation to Japan. It is possible that in the near future KComZ will be designated the coordinating agency for all evacuation to Japan including those from within the army area.

Area Medical Service

As a result of experiences during World War II, and the paucity of professional personnel made available to the Armed Forces during the interim between that war and the Korean incident, the concept of "area medical service" was accepted by the United States Army. This concept envisages deletion of organic medical detachments from combat and service support elements normally located to the rear of corps rear boundaries. Medical service for these units is provided, on an area rather than on organizational basis, by field army medical units under the control of the army surgeon. It was designed to enhance economy and flexibility by centralized control of medical means under one authority, rather than dissipating them across the army area under many commanders. It is not the intent of this paper to argue the relative merits of this controversial concept, but rather, a factual account of the manner in which area medical service is provided the Eighth Army, will be presented.

Among other missions, the Commanding Officer, 30th Medical Group has been directed to "provide area medical service to the rear of division rear boundaries for units

not authorized organic medical detachments, to include:

1. Dispensary service.
2. Dental service.
3. Medical laboratory service.
4. Veterinary service.
5. Preventive medicine survey and control service."

To accomplish this broad mission the group commander divided the army area to the rear of division rear boundaries into two geographical zones of responsibility. The boundary between zones coincides with a tactical boundary between US corps, extended to the rear along a clearly discernible terrain feature. Each of these zones is the responsibility of the commander of each of the operational medical battalions. (The third is committed to operation of a centralized medical training facility.) The zone of responsibility for area medical service, in each case, corresponds to the zone of responsibility for ambulance evacuation.

Responsible medical battalion commanders are allocated a balanced force of area medical service units, sufficient to accomplish their respective missions. Factors considered in allocating separate medical units between the two battalions include:

1. The mission of the battalion.
2. The area of responsibility.
3. The density and distribution of supported troops.
4. Special or unusual medical problems existing in each area.
5. The availability of area medical service type units.

The disposition and employment of area medical service units and installations are left to the discretion of the battalion commanders, subject to the approval of the group commander and the army surgeon. The advice of corps surgeons is solicited and given full weight in developing area medical service dispositions and procedures. The army medical laboratory, due to its general support mission, has been retained under the control of the group commander.

There are three defined area commands located within the army service area. These areas are exempted from the responsibility of the two medical battalion commanders. In each case, the commander of a separate medical installation is given the additional duty as staff surgeon to the area command commander. For the remainder of the army service area, the two battalion commanders accomplish all the normal functions expected of a "post surgeon," each in his own zone of responsibility. The group commander serves as the executive agent for the army surgeon in coordinating over-all medical service in the army service area.

In addition to normal area medical service units, attached to the two operational medical battalions, the commander of each medical unit and installation located within the army area has been directed to contribute to area medical service to the maximum commensurate with his own primary mission. Lateral coordination has been effected with other United Nations commands regarding joint usage of medical facilities to the mutual benefit of all parties concerned.

Dispensary Service

Dispensary service is provided Eighth Army troops by a variety of medical installations. Cellular units of the T/O&E 8-500 series include medical detachments (OA), and general dispensaries of both the MA and MB types. In addition, each medical installation having assigned Medical Corps officers provides incidental dispensary service to local troops. The medical detachments (OA) are oriented on major service and combat support elements, and normally displace with the major unit supported. The general dispensaries, on the other hand, are located in the vicinity of major static troop concentration and are not significantly effected by movements of single units. All general dispensaries are located within established area commands. In one major area, due to the shortage of Medical Corps officers, a general dispensary is commanded by an officer of the Medical Service Corps with a sponsoring hospital providing doctors on a

daily basis. This reflects a trend toward area hospitals with satellite dispensaries as is commonly practiced within the United States. Commanders of medical detachments and dispensaries serve as medical advisors to commanders of supported troop units, and participate in venereal disease, sanitary and allied programs. Despite the absence of unit identification, there is good rapport between medical installations and troop units supported.

Dental Service

Dental service and prosthetic detachments are provided each of the operational medical battalions. Recently, a third dental service detachment was activated and attached to a forward surgical hospital. This, again, is a reflection of the trend toward integration of dental and medical service on an area or "post" basis. The strengths of these dental service detachments are adjusted to correspond to the number and density of military personnel supported. Personnel-wise, T/O&E 8-500 Team KJ is considered more as a guide than a restriction. Dental personnel, as available, are allocated where needed in sufficient numbers for the mission to be accomplished. Detachment headquarters are located in the vicinity of major troop concentrations, with mobile operating teams moving about the army area as required by the dental support mission. In certain instances, dental personnel are attached to general dispensaries, medical detachments and hospitals, but all provide dental service on an area basis.

The army dental surgeon exercises complete control over the assignment of dental personnel, disposition of dental detachments and teams, and purely technical policies and procedures. Medical battalion commanders and the one hospital commander are responsible for normal command functions related to dental as well as medical units. Dental detachment commanders deal directly with the army dental surgeon on those matters which are purely technical and peculiar to their being dental support units. Normal command channels are utilized for all other administrative and operational matters.

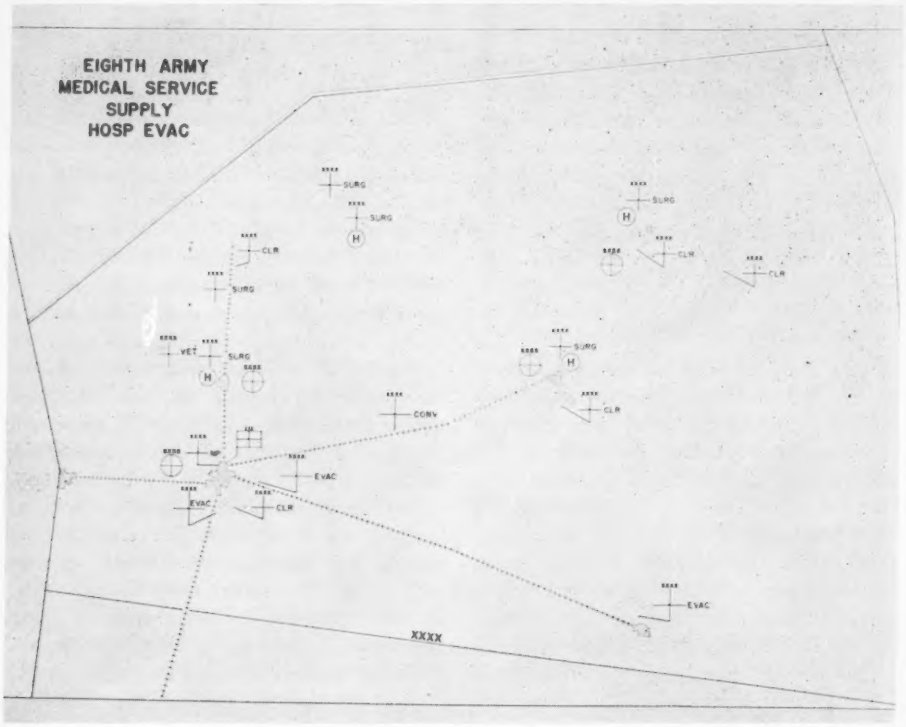
Medical Laboratory Service

Medical laboratory support for divisional and non-divisional units of Eighth Army is provided by organic laboratory facilities of hospital and clearing installations, supported by the army's medical field laboratory. The laboratory, less one mobile field unit, is located adjacent to an evacuation hospital in the army maintenance area. The one detached mobile field unit is located forward at the major army sub-maintenance area in the vicinity of a surgical hospital and several smaller treatment facilities. Emphasis is placed on exploitation of organic laboratory capabilities of forward medical installations, saving the army medical laboratory for the performance of more complex technical procedures and the support of peak loads as they occur. Transmission of specimens to the laboratory and its mobile field unit for examination, and return of reports to requesting medical installations are accomplished through the use of an established, scheduled courier service.

The army medical laboratory is capable of all laboratory procedures except virology. It supports the entire peninsula of Korea including medical installations in KComZ and those of the other United Nations forces. It is, in turn, supported by the 406th Medical Laboratory in Japan. It is augmented with an attached medical illustration detachment which has proven most valuable in the support of clinical, research and teaching endeavors. It has been of particular benefit to the many professional societies which have characterized Korea since the cessation of hostilities. The laboratory commander also serves as the laboratory consultant to the army surgeon, dealing directly with the army medical section on technical laboratory matters.

Veterinary Service

Two types of veterinary service are provided in the Eighth Army. Veterinary food



inspection service is provided by two detachments (Team JB T/O&E 8-500), one attached to each of the two operational medical battalions. These detachments are oriented on major Quartermaster Class I storage and issue installations, but veterinary units are not attached to the Quartermaster installations which they inspect. Teams from these detachments move about the army area as required in performing their food inspection mission. In addition to the normal mission of inspecting and supervising the standard U. S. Army ration, veterinarians are assisting in the improvement of the ration fed to indigenous employees of the Eighth Army and surveying plots of ground for possible use in local procurement of vegetables for US forces.

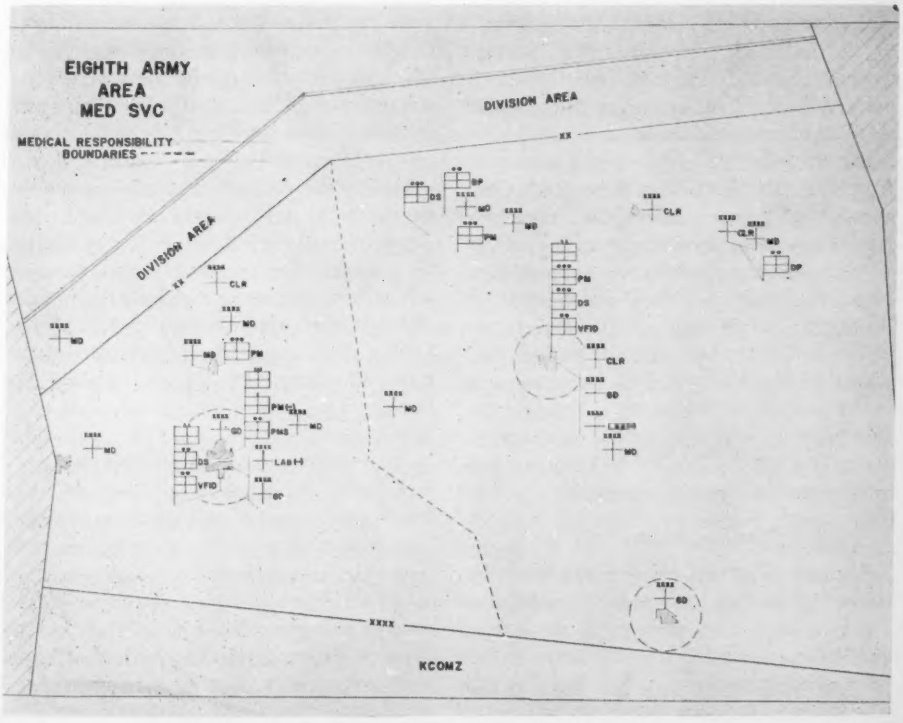
A veterinary animal hospital is located in the compound of one of the surgical hospitals. Its primary mission is the support of the several sentry and scout dog platoons attached to Eighth Army tactical and service units. It also provides treatment, on an available and reimbursable basis, to authorized unit "mascots" when such does not interfere with the primary mission of caring for military animals. The detachment operating this facility is a veterinary food inspection detachment adapted with personnel and equipment for its animal care mission. Again, an illustration of adapting T/O&E units to suit the mission at hand. The officer in charge of this animal hospital also travels about the army area inspecting scout and sentry dogs and advising their handlers concerning the health and sanitation of their charges. All veterinary units assist in the immunization campaign aimed at reducing the incidence of rabies in the Eighth Army area. The senior veterinary unit commander also serves as the veterinary consultant to the army surgeon

and advises the medical section and the remainder of the army staff on technical veterinary matters.

Preventive Medicine Service

Separate preventive medicine units in Eighth Army include the preventive medicine company, the preventive medicine survey detachment, and several preventive medicine control detachments. There has been a recent change in the organization and responsibility for preventive medicine survey and control operations. Prior to 1 April 1954, all separate preventive medicine units were allocated between the two operational medical battalions, with each battalion commander responsible for preventive medicine operations in his own zone of responsibility. Division surgeons were not entirely pleased with this arrangement, and expressed a desire for outright attachment of control detachments supporting their commands. In deference to their wishes, and to secure a comparative study of the merits of the two systems of organization, one preventive medicine control detachment was attached to each US infantry division, under the direct operational control of the division surgeon.

Simultaneously, the preventive medicine company, as well as the one survey detachment (the only preventive medicine units remaining under army control), were relieved from the two medical battalions and placed under the direct command of the group. This latter measure was indicated to provide depth to preventive medicine support and relieved the medical battalion commanders of any responsibility for definitive technical preventive medicine operations. In effect, the responsibility for preventive medicine was changed from a vertical pattern to a horizontal one. Survey activities forward



of the division rear boundary are now the mission of the one preventive medicine survey detachment; with control assistance being provided by attached preventive medicine control detachment. The preventive medicine company is responsible for both control and survey assistance in the remainder of the army area to the rear of division rear boundaries. Its headquarters and hygiene and sanitation section are located in, and support the army maintenance area. Its survey section provides general and specific survey support for the entire army service area. One control section is located in each of the major sub-maintenance areas, with the third well forward in support of a major concentration of US troops. Teams from these control sections move about the army area assisting responsible commanders in preventive medicine control procedures.

All medical installations providing primary medical care conduct periodic sanitary inspections for supported units. Monthly sanitary reports are prepared for such units to be indorsed and forwarded through normal command channels. Consolidated reports are prepared by acting surgeons of established area commands, covering all units within the geographic limits of the commands regardless of branch represented. Commanders of preventive medicine units have free access to the army preventive medicine officer on all technical matters as there is no preventive medicine officer on the staff of the group commander. Arrangements are being made to adapt organic medical helicopters for aerial spraying for control of insect vectors of disease. It is believed that this program will open a new field for the Army Medical Service and will improve preventive medical control procedures.

Medical Personnel

Utilization of realistic manning levels has permitted staffing of medical installations commensurate with their missions. Current T/O&E's are used as a guide to the staffing of medical support unit, but there is little hesitation in reducing the manning level of certain units and augmenting others when required due to special or unusual problems. The 30th Medical Group has proven most effective in the management of manning levels for both the large and small units under its command. Actual command control, with its prerogative of publishing special orders, has saved much time and confusion in the shifting of specialist personnel to meet fluctuations in mission or patient loads. The group submits one requisition for personnel for all units under its control, but is allowed considerable freedom in assigning personnel to meet actual requirements. This insures economy in use of personnel and further insures that each unit or installation has sufficient personnel for its immediate mission.

All male Medical Service Officers received by Eighth Army are assigned directly to 30th Medical Group by replacement agencies in Japan. This saves much time in normal pipe line and improves the morale of such officers. Officers, so received, are sent to the army medical and dental sections for interview and assignment. Specialist personnel of all corps are surveyed by appropriate consultants and division chiefs. The group commander is advised by the chief of the personnel division of the army medical section regarding assignments desired for specialist personnel, as well as those allocated to non-group units of Eighth Army. The assignment of non-specialist officers allocated group is left to the discretion of the group commander. Special orders are published by 30th Medical Group and transportation is provided to move all officers expeditiously to their duty station. This system has proven most effective.

Generally, specialized medical units and installations have been more fortunate in receiving personnel than have been dispensaries, medical detachments, clearing companies and ambulance companies. A high percentage of all officers received bear specialist MOS's, are not well grounded in basic Army Medical Service functions, and are reluctant to accept assignments in other than their chosen specialty. Specialized activities, including

supply, preventive medicine, neuropsychiatric, laboratory and dental, have remained at normal T/O&E strength or slightly overstrength. There has been a continuing shortage in qualified medical command and staff officers, and this has necessitated diversion of other critical specialists to these assignments. Dermatologists, radiologists, anesthesiologists, internists, obstetricians and thoracic surgeons have been placed in command and staff positions as a result of this situation. The next most critical "specialty" in the Eighth Army medical service is the general duty medical officer. Very few Medical Officers received bear this specification number, hence their positions must frequently be filled with medical "specialists." This is detrimental to morale of individual officers, and requires frequent and detailed explanation as to its necessity.

The majority of professional personnel received by Eighth Army entered the military service under the "Universal Military Training and Service Act." These men pose a special problem aside from their questionable motivation for military, and particularly overseas service. Requisitions submitted on a basis of grade and MOS requirements are normally filled with such officers as have been made available to The Department of the Army and Army Forces, Far East. On frequent occasions these officers possess ranks far above their military experience and the actual needs of the command. This requires assignment of majors and lieutenant colonels to positions normally filled by lieutenants and captains. This situation is particularly prevalent in the Army Dental Corps. The age and physical condition, as well as personal attitude of these officers, further mitigate against their most effective utilization. More junior officers, better qualified in the practice of military medicine and dentistry, are deprived of an opportunity to command and otherwise develop their full capabilities. Within the Eighth Army, each of these incoming senior officers is given a full explanation of the existing situation, and each is exhorted to accept his position and accomplish his assigned tasks. The overall spirit and cooperation of these over-age and overgrade officers is commendable.

Medical Intelligence

Medical intelligence activities since the cessation of hostilities have been primarily an extension of preventive medicine, with emphasis on the presence and nature of diseases among the enemy and the civilian population. There has been little opportunity for examination of captured enemy medical equipment and supplies. Enemy medical order of battle information is collected, evaluated and disseminated by normal intelligence agencies. Medical assistance and advice are provided such agencies as required. Classified medical intelligence projects are beyond the scope of this paper.

One very active medical intelligence detachment works out of the army medical section under the supervision of the preventive medicine division. The other two detachments are attached to US corps. One is nonoperational and the second is utilized to augment the preventive medicine support of the command. Each operational detachment consists of one medical officer and one enlisted man. Equipment identification warrant officers are not included in the teams due to the limited nature of their operations. Examination of captured enemy medical supplies and equipment can be accomplished by the army medical depot and its advanced medical supply points. The army medical laboratory is likewise available to assist in assay of captured enemy biologicals and other medicines.

Medical Training

With the cessation of hostilities, acceleration of the rotation program, and reconstitution of combat and service elements of Eighth Army, formal individual and unit training assumed new importance. Army medical units began to generate shortages in fundamental MOS's which exceeded the number of replacements being received. Many men, assigned to medical units during

combat without formal medical training, expressed a desire for such training. Improved administrative procedures accomplished the reassignment of many men to medical units for mental and physical as well as administrative reasons. A requirement was developed for a centralized training facility capable of training enlisted Medical Service personnel in the basic MOS's needed in field medical units.

In October 1953, a separate medical battalion was relieved of its operational commitments and directed to establish the Eighth Army Medical Training Center. This organization, composed of one clearing company, one ambulance company and one medical detachment, developed the plant and curriculum for the training center. Other units of 30th Medical Group were screened for instructors and, by mutual transfers, the battalion became a balanced academic force. The professional staff of the training center included two Medical officers, two Army Nurses, and one Dental officer, in addition to carefully selected Medical Service Corps officers. Especially qualified enlisted instructors were utilized to supplement this academic staff. Guest instructors have been used to present certain specialized subjects.

Due to the mission of Eighth Army medical service and its training requirements, only enlisted classes are conducted at the center. The courses are greatly abbreviated over similar courses being conducted in the United States. The school is not intended as a duplication of training available in the United States, but serves as an expedient to insure that operating medical units have well-qualified enlisted non-commissioned officers and technicians. Classes presently in session include:

		weeks
1. Medical corpsman	MOS5657	3
2. Medical technician	1123	4
3. Medical record and reports		2
4. Medical equipment repairman	1229	2
5. Operating room technician	1861	4
6. Medical aidman	1666	4
7. Leadership		4

The medical equipment repairman's course is actually conducted at the army medical depot, but was developed at the training center and is the responsibility of the training center commandant. All other classes are presented to resident students at the training installation.

The training center also includes a sanitary demonstration area which is used to demonstrate field sanitary expedients to groups of non-resident students from all Eighth Army units. Upon request, groups of military personnel are conducted through this area by competent instructors, with free discussion of facilities demonstrated. This central medical training facility has proven most successful and has precluded the uneconomical alternative of having each major tactical command conduct its own schools.

Separate army medical units conduct training in compliance with published directives and a master medical training schedule disseminated by 30th Medical Group. In addition to prescribed training, unit commanders are charged with the responsibility of developing training schedules which are realistic and commensurate with the requirements of their own units. The availability of the Eighth Army Medical Training Center permits unit commanders to concentrate on unit rather than individual medical training. Medical participation in major command post exercises and field exercises is active and realistic. Training in all units includes unit defense against guerrilla activities and air attack. Medical personnel are required to familiarize themselves annually with their basic individual weapons. Wherever feasible, medical personnel qualify with such weapons. Considerable emphasis has been placed on organized competitive athletics for their morale as well as physical benefits.

Short courses for Medical officers have been conducted at designated army medical facilities. Courses which have been conducted include:

1. Clinical pathology.
2. Hemorrhagic fever.
3. Artificial dialyzer.

4. Vascular surgery.
5. Orthopedic surgery.

Special presentations by guest lecturers from Japan and the United States have proven very popular and well attended. There are many active medical societies throughout the army area, at which local medical officers gather to present and discuss papers of both local and general medical interest.

Worthy of special note, is the present system of training and utilization of Army Medical Service helicopter pilots. These Medical Service Corps pilots are dually qualified as rotary wing pilots and medical assistants (MOS 3506). The Eighth Army medical service feels a strong responsibility for insuring that these junior officers develop their capabilities as Army Medical Service officers, as well as fly aircraft used in evacuation of casualties. To this end, they are completely integrated into the overall medical functions of the hospital compounds upon which they are based. Concurrently with their normal flying duties, they are assigned certain additional responsibilities common to the Army Medical Service. There was, initially, some resistance to this program on the part of individual pilots. Now, all agree that the present program is to the mutual benefit of individual pilots and the Army Medical Service. The capabilities of medical helicopter ambulance detachments have not been reduced by this program, but have been improved through greater identification of pilots with their basic branch of the service. This program is being intensified and is recommended for the aviation program throughout the entire Army.

Training has not been confined to U. S. Army medical personnel. An active teaching program for the ROKA medical service was initiated during the recent hostilities and has been increased since the truce. Relatively long courses of instruction are conducted for resident officer and enlisted groups by the army medical depot, the army medical laboratory and the neuropsychiatric treatment center. A team of U. S. Army doctors, nurses and enlisted technicians operates continuously in the Capital ROKA Hospital in Seoul, teaching and advising ROKA medical personnel. Selected ROKA medical officers work in designated U. S. Army hospitals observing new methods and operating selected indigenous patients. Individual U. S. Army medical personnel assist in teaching in established ROKA medical training facilities. This is particularly important in the fields of pediatrics and preventive medicine. ROKA medical personnel are afforded an opportunity to work alongside U. S. Army operating medical units, receiving formal as well as "on-the-job" training. This has been especially exploited in the case of preventive medicine units. U. S. Army speakers are made available to address ROKA medical meetings utilizing translations of papers to be presented. The programs described above have proven most effective and have constituted a major portion of the Armed Forces Medical Assistance to Korea program which has received considerable command emphasis at all levels.

Conclusions

A factual, panoramic picture of Eighth Army medical service during the interim period following the cessation of hostilities has been presented. The application of the basic accepted principles of medical service has been emphasized, and the necessary deviations from doctrine have been explained and justified. The period described has been an unusual situation. It is the first time the United States has ever finished a war with an active enemy to its front in a world of general unrest. Medical service policies, organization and procedures have reflected a realistic compromise between combat readiness and economical medical service on an area basis. The first field test of a central army medical command has been described, and is recommended for further consideration. The first real test of area medical service in a major tactical overseas command is related, with some detail as to its organization, policies and procedures.

The tactical situation in Korea is a kinetic one, reflecting the changing political situation throughout the world. Medical service organization and procedures are, likewise, constantly changing. This is as it should be, as effective medical service must be oriented on tactical units supported. In the interval between writing and publication of this paper certain other changes will occur. The medical service of Eighth Army during the related period is recommended for study and analysis by all those interested in the development of field medical organization, policies and procedures. The two plates on pages 448 and 449, will be useful in orienting the reader as he studies each separate phase of medical service of the Eighth United States Army.

Book Review

COMBAT SUPPORT IN KOREA. By Capt. John G. Westover. Prepared under the auspices of the office of the Chief of Military History, U. S. Army. 254 pages. Combat Forces Press, 1529 18th St., N.W., Washington 6. 1955. Price $5.00.

This book is a collection of anecdotes from the grim progress of the war in Korea—all acquired by the process of interview. It makes no claim to be history or critique. Its truth and candor admittedly depend on the interviewees. Varying from eight pages on "The Mine that Saved Sinnyong," to three paragraphs on how an isolated hospital traded ethanol for rifles, the 141 selections are random but absorbing glimpses into the tribulations and accomplishments of branches other than Infantry, Armor, and Artillery. These arms have already been covered in "Combat Action in Korea," a book to which this is said to be a companion piece though it lacks the message, intensity, and coherence of its predecessor.

The section on medical service is brief, and all of the medical accounts antedate 1952. There is a brisk narrative of the Medical Company, 21st Infantry, fighting in its own defense; a solid piece on early helicopter evacuation; and notes from the first surgical hospitals to see action.

The book is a valuable addition to the shelf of "compleat militarist."

LT. COL. DOUGLAS LINDSEY, MC, USA

Thoughts on Medical Public Speaking

By
COLONEL WARNER F. BOWERS, MC, USA*

INTRODUCTION

FEW of us are natural born orators, and to many of us public speaking remains an agonizing ordeal to be endured only under duress. Many fail to realize that public speaking is a part of a doctor's daily life because every time we present a case on ward rounds or each time we present an idea to our commanding officer, hoping to put across our point, we employ the elements of public speaking. Medical educators state that one of the greatest needs in medicine today is for qualified and inspiring teachers. Good pedagogy is closely bound to good and effective methods of presentation of material which is another way of saying that a good teacher is a good public speaker. A little thought on the subject will show that in the Army many choice assignments, professional and staff, depend upon teaching and speaking ability. For this reason, it is desirable to improve our technic of presentation of ideas.

CHOICE OF SUBJECT MATTER

Before it is possible to prepare a paper for delivery, we must first ascertain the goal or mission to be accomplished. Obviously, emphasis and subject choice will vary depending upon whether we are attempting to teach fundamentals to beginners, refresh the minds of general practitioners, bring new techniques and ideas to specialists, or inform a lay audience. Thus, it is necessary to be appraised regarding the type, size and level of educational attainment of the audience. After this, it is simple to decide whether to report on an interesting case or series of cases, describe a new apparatus or drug, discuss a new idea or procedure, or report on a recent meeting, trip or experience. The main requisite is that the speaker be interested in and informed concerning the subject chosen.

TYPES OF MEDICAL PAPERS

Obviously, the most elementary type of medical paper is the simple case history presentation but it probably is safe to say that it is bungled more frequently than any other form of presentation. There is a tendency to pad the presentation with non-essential data and negative findings, including an enumerating of the normal laboratory findings. The recitation of a long list of chemical examinations does not impress the audience with one's erudition. The other sin is presentation of the case by a series of abbreviations, colloquial expressions and other forms of medical jargon which force the listener to decide whether CVA means cerebrovascular accident, costovertebral angle, central vertical axis or something more esoteric and cryptic. Somewhat more complicated is the case report with review of the literature on that subject. Rarely will editors accept a simple case report, so that some quotations from the literature are almost mandatory. Next in complexity comes the statistical analysis of a case series, either a personal review of experience in a given field or the lazy man's form where questionnaires are sent to well known men, the paper then being compiled from the material from those so unwary as to reply. Another armchair type statistical analysis is the compilation of all statistics from the literature on a given subject. Thus may one become an authority on any subject without the necessity for having any personal experience. Another type of medical paper is the presentation of

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data and conclusions arrived at by personal research. If promptly done, such a paper is fresh, informative, and has the advantage of the enthusiasm of the investigator. However, this enthusiasm should not be allowed to dull the credulity of the audience. The speaker must give sufficient background material to orient the audience in a field which may be unfamiliar and he certainly must state clearly what was done, how the results were obtained and by what means the conclusions were drawn. Apparatus and methods must be described so that the audience can exercise some critical judgment. A final type of paper is the philosophical discussion which can be indulged in only after one has attained sufficient age and experience to carry it off well. This privilege is one of the rewards of advancing age but too often is overplayed by those approaching senility. There is a middle ground.

How to Write a Medical Paper

Having chosen the subject and selected the proper form of presentation, the next procedure is the actual writing of the paper. The simplest plan is to break the subject into convenient subheadings, write each of these on a separate sheet of paper, arrange these sheets in logical sequence and then write or otherwise prepare each section separately. These sections need not be prepared in order, provided that care in taken to assure smooth continuity. Obviously, there must be a proper and dignified introduction and the speaker must be prepared to name important guests in his salutation. It is extremely important that such individuals be addressed by correct title and name. Failure in this regard brands one as a novice. Also, in the introduction, the speaker should orient the audience as to the reason why the subject was chosen, and it is well to include a statement as to why this subject is important to members of the audience. After the body of the paper, a concise summary is a must. There is a growing tendency to fail to state what has been shown or proven and such a summary is valueless. The summary should be so prepared that when the paper is published, a prospective reader can decide from the summary whether it will be worth his while to read the entire paper. A poor summary usually follows a poor and inconclusive paper. Finally, the speaker should be prepared to conclude gracefully and definitely. Too many speakers continue past one anticlimax after another until the audience is painfully aware that the reader has missed many excellent opportunities to sit down. The axiom of "say it and sit down" is unbeatable.

Mechanics of Presentation of the Paper

There are a number of ways in which the paper can be prepared for delivery and although various methods will appeal to different types of speakers, it is well to be able to vary one's delivery style to prevent monotony. The simplest procedure is to use a completely written manuscript. This is wise if a copy of the paper must be submitted after presentation or if the speaker is not experienced enough to trust himself away from a typed page. Ordinarily, the paper should not be read to the audience if it can be avoided. If, however, the paper is highly technical, contains many difficult words, or if the speaker is not entirely familiar with his material, he may read it but should not apologize to the audience for this. Large typewritten pages are clumsy to manage, and a more graceful procedure, if one needs a completely written paper, is to use a series of small cards on which the entire paper is written. This makes the reading a little less obvious, does not chain the speaker to his lectern, and allows him to move to blackboard, screen, viewbox or what not. A more facile speaker may use small cards on which the outline of the talk is written, with only special parts or points being written out more fully. A more daring speaker may use cards on which the bare outline of subject headings are written. This markedly reduces the stack of cards needed. If lantern slides are used to show apparatus, specimens, and ma-

terial other than printed matter, it is well to have a card which contains a list of the lantern slides in proper order, telling what they show. Little is so disconcerting to an audience as the speaker who forgets what his slides are supposed to show. A somewhat crude procedure is to have the entire talk written out on a series of lantern slides which the speaker then reads off to the audience. This has always appeared to be an insult to the intelligence of the audience, since the slow readers will be behind you, the rapid readers will strain to speed you up and a miserable time will be had by all. Use of lantern slides containing the outline of the talk is a very acceptable and widespread device, allowing the speaker to speak extemporaneously within that framework. For the experienced speaker, it may be sufficient to have a carefully prepared introduction and ending only, trusting that a flow of words and material will carry one between these two points. It should be remembered that in extemporaneous speech it is more difficult to be concise, remaining within the prescribed time limit. The speaker with wide experience, an organizing type of mind and a good flow of language may safely rely on a completely extemporaneous presentation but this technique has many pitfalls.

Technique of Public Speaking

An acceptable technique of public speaking is developed only after considerable experience and there are many do's and don'ts to be remembered. Eventually, these come automatically but at first the speaker must consciously cultivate a pleasing style. First and probably most important is the admonition to be brief and to the point. Above all, stay within your allotted time and, if possible, conclude early enough to allow time for a question or two if appropriate. The voice may immediately gain or lose friends for the speaker and should be slightly lower in pitch than normal because the tension of speaking in public has a tendency to make us shrill. The speaker should avoid a monotone by cultivating an interesting inflection. The tone should be factual and nonclergical, since most of us are selling neither soap nor salvation. Exhortation is distinctly out of place in a medical presentation. The ubiquitous microphone is a very mixed blessing and the downfall of many speakers. The speaker must avoid alternately shouting and whispering, and unless a lapel microphone is used, he cannot wander about the stage if he is saying anything he wishes the audience to hear. A poised stance with few mannerisms is best. Avoid twirling the glasses, tweaking the nose and the thousand and one other mannerisms which so clearly indicate embarrassment and lack of skill. The use of wit is perfectly acceptable in most situations but unless very skilfully done, the speaker should avoid allegedly funny stories. The speaker who always begins by being reminded of the Irishman who—etc. usually deserves the hook. Furthermore, you can plan on 50% of the audience having heard the story and another 25% not thinking it very funny. Vulgarity is neither clever nor emphatic under any circumstances and simply gives evidence of a scanty vocabulary. The speaker should never apologize nor should he step out of character. The speaker who begins by saying, "I don't know why I was asked to give this talk," will find that the audience usually agrees. The outline should be made clear to the audience as the talk progresses from point to point, this being done by lantern slides, by reading headings or by saying something like, "Now I wish to progress to my next point," "there are three causes, of which the first is," etc. The speaker should, by practice, assiduously cultivate an easy flow of correct language and he should endeavor to stay a little deeper than the audience so as to stimulate them but not deep enough to bewilder them. Avoidance of stereotyped phrases and generalities is very important. These include such old chestnuts as "so-called," "as I previously said," "went steadily downhill," "patient became toxic," "routine operation was done," "patient went bad" and others. Similarly, the cliches and jargon-expressions are to be avoided. These

include such generalizers as, "go all out," "or what have you," "go down the line," "out in left field," "lacks some of his marbles," "the stage was set," "sitting on a powder keg," "we coughed and sucked the patient," and similar expressions which convey no clear meaning. Another reprehensible form of jargon is the medical abbreviations which cause the inexperienced speaker to say "LMD sent pt in with clouded CVA and abnormal EKG. IVP was normal but LUQ was tender and AURI was present. PPD was OK and lab showed CBC compatible with DOA." The speaker might just as well lapse into Hindustani which would be much more musical and just as informative. Another pernicious habit is to compare everything with food, as "rice water stool," "prune juice sputum," "pea soup pus," "walnut-sized mass," "anchovy sauce pus," "cauliflower mass," "currant jelly stool," etc. ad nauseam. Garbled sentences and faulty word usage are all too common and many times result from inexperience, embarrassment and an attempt to speak too rapidly. Such examples as "nature of the tumor is red," "anterior to the time of operation," "patient has no temperature," "patient was operated," "no pathology was found" are relatively common. Incorrect pronunciation of words is so common as to be almost universal and one has only to think of the variations in "duodenum," "ureter" and "embryonal" to recognize this point. Incorrect pronunciation of medical terms indicates lack of knowledge or carelessness and arouses the suspicion that the speaker may be careless about his statistical data also. Speaking of statistics, nothing is so boring as a speaker who quotes reams of figures expecting the audience to pay much attention to them. If figures are inevitable, they should be easy to comprehend and remember. It is much better to say "about half" instead of "49½%" although in print the exact figures should be used. Similarly, foreign words and difficult terms should be avoided if possible because they rarely add to the attractiveness of the presentation. Repetition is a good mechanism for purposes of emphasis, if not overdone, but should not be used as a space filler. Few of us have studied dramatics and most of us know only one or two gestures which we use over and over without regard to their relevance. Drama and gestures should be left to the stage and Shakespeare should be quoted infrequently if at all. Also, it is best to avoid opening or closing with a poem unless the speaker excels at reading such material. Direct verbatim quotations from the medical literature are difficult to put across and are best paraphrased. The speaker should avoid egotism and bragging because after the first few sentences you usually have given yourself away and the audience knows how good you are without being told. It is easier to fool yourself than a medical audience. Furthermore, it is extremely important to be courteous and smooth especially when disagreeing with another. Disagreement should be modest, without sarcasm and it is always well to say something complimentary before saying something critical. Don't underestimate another speaker hastily; he may not have told all he knows and may easily be as smart as you. Finally, in the summary, give the bare, unadorned facts, tell what has been proven and stress what has been the object of the talk.

Proper Use of Visual Aids

Unless properly used, visual aids become actual hindrances and may ruin an otherwise good presentation. If the blackboard is to be used, visible colored chalk is essential as are large drawings and legible writing. Previously prepared drawings or writing will save time but if you must draw during the presentation, talk at the same time to retain attention. Be very sure to let the audience see what has been drawn and remember that while you can see through many speakers mentally, few are transparent physically. This applies with equal force when allegedly demonstrating x-ray films to a group. Furthermore, if the films are poor, don't apologize—just don't show them. Microscopic slides ordinarily project very

poorly so it is best to use photomicrographs for this purpose. Charts must be clear, legible, intelligible, pertinent, and must be changed smoothly. Excessive fanfare in this regard distracts the audience. Clinical records and graphs are best projected, as they can be seen otherwise by only a very small group. Specimen demonstration usually is poorly done and a shriveled, brown, wet, greasy, stinking chunk of tissue reveals little except the speaker's discourtesy in passing it around. Specimens should be properly spread out, oriented, labeled, and the tray should contain appropriate forceps if needed for turning. A better plan is to project the specimen or a photograph of the specimen because it must be remembered that passing a specimen through the audience is distracting. Furthermore, it takes time, and when the speaker is several pages farther along, those in the last row are just getting the specimens so that they miss some of the presentation while they examine the exhibit. This can be obviated by having the specimens on view before or after the talk. Nothing mars a talk like poor lantern slides. The speaker is strictly accountable for the sequence, position, cleanliness, pertinence and visibility of his slides and should allow suitable time to show them. There are essentially three methods of using lantern slides. If the entire talk is on slides, obviously they are used throughout the presentation. If there are few slides, some speakers intersperse them throughout the talk, and here the repeated fiddling with the lights is very clumsy and disconcerting. Much better is the plan of grouping the slides at the conclusion, using them as a summary or for purposes of emphasis. If a patient is to be presented in person, it is important that all arrangements be made with care. Dressing cart, examining table, chair, proper drapes, female attendant, and any other necessities should be anticipated to avoid awkwardness or embarrassment for the patient. Questioning the patient is crude because few patients are public speakers and you may be unpleasantly surprised at what they say. Finally, always publicly thank the patient for his kindness in appearing. Remember that the audience may not be familiar with special instruments or apparatus so it is well to show them or pictures of them. Similarly, the details of anatomy may need emphasis, and here the skeleton, wax models, moulages, paper outlines of organs which can be cut with scissors to demonstrate an operation, and similar devices are helpful. Proper use of the pointer and flashlight requires brief mention. Use of a pointer allows the speaker to stand well aside while pointing out specific details. The flashlight should have its beam in spot focus, should be turned off when not in use, and should not be used to make ineffectual arcs on the walls and ceilings.

The Closing Discussion

Usually, at the close, the speaker is called upon to answer questions from the audience and then to make a few final comments. This is a very important part of the talk during which it may be possible to retrieve considerable lost ground. The speaker should jot down the questions as they are asked because the moderator may prefer that all questions be asked before any are answered. It is important to repeat the question each time because the questioner rarely has a microphone and the audience rarely hears the question. If possible, the speaker should answer questioners by name, especially if questioners are prominent men who should be known to the audience. During the closing remarks, all discussors should be thanked for their helpful comments or criticisms and it is courteous to thank the moderator also. The closing period ordinarily is used to emphasize and summarize points previously made, and it may be possible to soften criticism made by discussors. The speaker should be ready for any emergency, however, and a good example of what can happen is an instance where the moderator became confused and called time on the speaker after five minutes instead of fifteen minutes. Consequently, the junior joint author who had five minutes to show a few lantern slides had to jump into

the breach and extemporaneously interpolate as much of the paper as possible between slides. Unless this closing period is handled adroitly, it is possible to lose most of the effectiveness of the whole talk.

The Extemporaneous Discussion

Facility in extemporaneous discussion comes with a developing flow of words which in turn should be based on knowledge of the subject. A good rule is never to attend a meeting without some prior review of the subject so that there will be some basic familiarity if one is called on for discussion. During any talk, it is a good habit to jot down or mentally formulate some points for discussion should the need arise. If juniors form this habit, even though they are sure of not being called on, by the time they attain sufficient eminence so that their discussion is requested, they will be ready when the occasion presents itself. It is always a pleasure to hear a young man acquit himself well under such circumstances and makes a lasting good impression. It is well to remember that one should ask questions in order to receive information and not for the purpose of parading knowledge. Those who ask questions from this latter motive fool no one. In making an extemporaneous discussion which may be critical in nature, it is always well to say something kind about the speaker first. This always should be possible because at least we can thank the speaker for taking the time to come. A great bore at almost every meeting is the man who just cannot refrain from discussing or commenting on every paper. He usually does this from a selfish motive, but most often achieves notoriety rather than acclaim. In the same category is the man who always just happens to have a hundred slides in his pockets, dealing with the subject at hand. It should be remembered that the speaker on the program has been invited to use the floor and if you have an uncontrollable urge to grab the limelight, you might well consider renting a hall of your own.

Summary and Conclusions

Medical public speaking is an important field of endeavor which directly affects most doctors. The fact that most of us do so poorly at it indicates that insufficient time and effort are expended on improvement.

Various types of medical papers have been discussed and different mechanisms of preparation for delivery have been presented.

How to organize and write a medical paper has been discussed with numerous hints on how to deliver the paper in the most effective way. Visual aids have been described and pitfalls in their use have been mentioned.

Finally, the techniques of the closing remarks and the extemporaneous discussion have been presented.

What Will Be the Great Medical Advances of the Future?

By
LOUIS H. RODDIS, M.D.*

"And all the days of Methuselah were nine hundred sixty and nine years: and he died."
GENESIS V: 27.

THE most important medical advances of the past are probably the discoveries of the circulation of the blood; the germ origin of the infectious diseases; smallpox vaccination; the x-ray; the causes and prevention of nutritional deficiencies; and the development of salvarsan, the sulfonamides, and the antibiotic drugs. To these might be added the invention of the stethoscope; the use of the ligature in surgery; the employment of insulin in diabetes; and the discovery that many important diseases of man are transmitted by insects and other animals.† It is largely due to these and other medical advances that in the last half century, life expectancy in the United States has increased more than twenty years. Since 1939 it has increased as much as four years, and the infant mortality has been reduced about two thirds since 1915. Deaths from childbirth and its complications are only about one per thousand, an incredibly low figure when compared with the maternal mortality of one hundred years ago, or with the deaths from childbirth among primitive peoples where modern medical assistance is not available. Thus the progress of medicine has led man a long way on the road to health and comfort in comparison to his disease ridden ancestors of both prehistoric and fairly recent historic times.

Such are some of the great medical achievements of the past, and the question at once arises as to the direction of medical progress in the future. In other words, if we were to assume the role of medical prophets, what would be our predictions as to the medical developments of the next half century?

DETERIORATIVE CONDITIONS

It seems certain that one of the first fields for advancement will be in the treatment of the deteriorative diseases. These are largely due to the ageing process, though some are undoubtedly the result of poor or defective germ plasm. The ageing process itself can be called a disease; and one that is universal, progressive, incurable, and invariably fatal. The changes involve the entire organism but are felt more particularly in the heart and blood vessels, the kidney, the glandular organs, and the nervous system. It is possible that malignant tumors may be included in this group of degenerative conditions. Certainly it contains many diseases due to inherited tendencies to the early degeneration of particular structures. Huntington's chorea, multiple and lateral sclerosis, the muscular atrophies and dystropies, and Friedreich's ataxia belong in this class.

INDIVIDUAL LIFE EXPECTANCY

Medical efforts directed toward the control of the degenerative diseases will have far reaching effects on life expectancy. It must be pointed out that though the average life expectancy has been increased, there has been no extension of the individual life span. This is due to the fact that the decrease in the death rate has been largely in the younger age groups as the result of the better control of the infectious diseases. The relative proportion of those living to be seventy, eighty, or ninety years of age has remained unchanged. Increase in the individual longevity will be one of the problems to which the medical profession will give more and more

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† See "Ten Greatest Advances in Medicine," Roddis, L. H., Military Surgeon, 115:445. (1954).

attention in the future. Doctor Alexander Bogomolets, the eminent Russian physician, who made a special study of the possibilities of the prolongation of life, stated that "a man of sixty or seventy was still young. He has lived only one half his natural life." He based this view on the relationship between the length of time required for an animal to attain maturity and the time from maturity to death. From his studies of various mammals he came to the conclusion that man, who completes his period of growth in twenty to twenty five years, should live four or five times that length of time, or from one hundred to one hundred and twenty five years. The possibilities are indicated by the fact that many men and women do live more than a century. There are records of many famous men who were active and productive in later life. Thus, Michael Angelo did important work in architecture, painting, and poetry, up to the time of his death at eighty nine. Goethe completed Faust when he was eighty two, and fell in love again when he was eighty! It is certain that increase in the individual longevity will be one of the problems to which the medical profession will give more and more attention in the future. Perhaps medical research will restore the patriarchal age. The name of Methuselah has passed into our common speech as a synonym of longevity. Perhaps in the future, medical knowledge may be able to curb the deteriorative diseases associated with the ageing process, and restore, in some measure, Methuselah's legendary span of life.

Injuries

In contrast to the long strides forward in the prevention of disease; death and disability from injuries have increased and continue to increase. Worse still, is the fact that many of those injured are permanently disabled with serious effects on the well being of themselves and their families. In the United States in 1951 there were about 9,500,000 accidental injuries with 94,000 resulting in death. There were 350,000 permanent disabilities. The financial loss was estimated at approximately four and a half billion dollars. About one half of all injuries occurred in the home. Because of the diversity of peoples and conditions it is almost impossible to estimate the number of injuries for the population of the world. It is obvious that accident prevention and the treatment of injuries is second only to the control of disease in importance. In this, as in other public health work, the medical profession has to co-operate with numerous groups if progress in the treatment of traumatic conditions is to continue. One of the world's greatest surgeons called war a "traumatic epidemic." Trauma is *endemic* in peace and war, and is a principal cause of death and disability.

Malignant Disease

Although cancer might be placed by some among the degenerative diseases, its high rate of incidence, and doubt as to etiology, make it necessary to put malignant growths in a class by themselves. The diverse character of malignant tumors makes it unlikely that any one therapeutic agent will provide a cure. However, the discovery of new diagnostic methods and successful means of treatment of the various types of cancer will be one of the major achievements of the next few decades.

Prediction and Control of Sex of Offspring

A method of predicting the sex of an unborn animal and of the production of a male or female at will has long been sought. It would be of great economic value to stockgrowers and farmers. Such a discovery applied to human beings would have revolutionary effects on our social structure and human history; whether the effects would be destructive or constructive is a matter for speculation. The practicability of developing a method of control of sex production is shown by the bees and other social insects who are able to develop queens from the

larvae at will. Whatever the effects may be it is certain that studies on this subject will be carried on extensively in the future.

Extension of Modern Obstetrical Care

Modern obstetrics has made possible a maternal death rate of about one per thousand. Indeed one hospital in the United States has a record of more than five thousand deliveries without a single death. These results are only for the United States and some of the European countries, and the benefits of such medical care is needed in nearly every part of the world. It is a widely held, though erroneous belief, that women of primitive peoples have little or no trouble in childbirth, and are able to resume their ordinary occupations immediately after the birth of a baby. This idea apparently arose from the unsubstantiated stories of various travelers of the 17th and 18th centuries. Scientific examination of the subject has shown that such statements are untrue, and that women from primitive cultures do not have an easier time in labor than women from the civilized countries. The maternal death rate is much higher among the former due to the lack of appropriate medical assistance during pregnancy, labor, and the post partum. One of the aims of the next half century will be to make childbearing safer for all women throughout the world.

Spread of Modern Medicine to Other Countries

The provision of obstetrical care will be only a part of one of the most important developments of the future—the extension of medical knowledge to a larger part of the earth's population. Modern medicine and all of our science is of European origin. It can be said that three fourths of the population of the world are without the benefits of modern medicine and the extension of those benefits to all parts of the earth will be one of the great problems of the future. It is, however, not entirely a task for the medical profession alone. The fact that our modern medical and technical knowledge is not more wide spread is due to social, political and religious causes. The caste systems and the complicated social and religious differences of many Asiatic and African cultures, prevent the acceptance of much of our medical and sanitary practices. The spread of medical knowledge and facilities requires changing the way of life of vast populations, violating old traditions and loyalties, and conflicting with ancient religious and ethical codes. Such changes introduce disruptive, even explosive, forces into these old societies. The question of increased population pressures and food shortages are also to be considered, where improved health conditions result in a lessened death rate and an increased birth rate. In spite of these and many other difficulties, it seems certain that the extension of modern medicine to all the regions of the earth will be one of the main movements for the remainder of this century and perhaps for a much longer time.

Tissue and Organ Transplantation

This is the most dramatic and probably the most fruitful field for surgical advances. Already the transplantation of tissue has gone a long way but the possibilities are increased by constantly increasing knowledge of cellular physiology and chemistry. New methods of tissue nourishment are extending the power to replace damaged organs and tissues. The transplantation of skin was one of the greatest advances in surgery, and has been followed by the transplantation of bone, cartilage, fascia, muscle, and glands. The kidney has been successfully transplanted in identical twins. Virtually the entire blood content of the body has been replaced. The transplant of entire organs or even of limbs seems feasible.

Infectious Disease

At the recent dedication of the Mayo Memorial Building at the University of Minnesota, Dubois drew attention to the fact that the infectious diseases are far from

conquered, and that much remains to be done in this field. Work for the future includes the invalidism due to the so-called non-pathogenic bacteria, latent infections, and to host reactions. The mechanism of immunity is not fully understood, and there is need of new ideas and methods of immunization. Many major diseases such as tuberculosis, syphilis, and numerous tropical conditions might be better controlled if satisfactory protection could be conferred by vaccination.

Atomic Medicine

It is too early to predict just what will be the future of atomic medicine, but enough progress has been made in the use of isotopes and atomic radiation in research, diagnosis, and treatment to justify great hopes from the employment of nuclear products in medicine. Many problems in physiology, pharmacology, and experimental medicine have been solved, and the way has been opened for further advances in the medical sciences and clinical medicine. What might be called "atomic hygiene," dealing with the prevention of injury from nuclear radiation is in its infancy and offers an inviting field for research.

Mental Disease

Contrary to general belief much has been done in the last fifty years in the treatment of mental diseases. The classification of the psychoses; the more complete understanding of the neuroses; the development of new instruments of diagnosis, such as the electroencephalograph; marked advances in the treatment of mental disease due to organic conditions; and the use of new drugs have brought about a great change in the outlook for the mental case. Now we seem to be on the threshold of another step forward in the treatment of the psychoses. This is in the use of a number of new drugs that are capable of stimulating or depressing key brain centers and producing changes in the personality and conduct. It appears, too, that these changes may be retained by suitable maintenance dosage.

Interspace and Environmental Medicine

It may seem that this is a subject more suited for a comic book than a medical journal. Actually it is no more fantastic to speak seriously of space medicine now than to have predicted the development of aviation medicine fifty years ago when aviation was in its infancy. It is scarcely realized by many that flying at high altitudes and high speeds is almost as much dependent on the advances in aviation medicine as it is on metallurgy and aeronautical engineering. Being productive and comfortable beneath the surface of the sea, deep in the earth's crust as in some types of mining, in the tropics, in the arctic, on the desert, and in crowded cities, has been possible only with the assistance of medical science. Man now plans machines for travel outside the earth itself, and will call for the medical knowledge to enable him to live and function for at least a limited time in a new environment —interplanetary space.

Eugenics

It has often been pointed out that man has improved the breeds of domestic animals, and numerous varieties of plants, but has done little or nothing toward the biological improvement of the earth's dominant animal, man himself. In fact, much has been done to injure rather than improve the human race, and many of our institutions tend toward a regressive evolution. It is certain, however, that more and more attention will be given to the importance of the development of man into a better physical, mental, and moral being. Many agencies must work together to produce results, but here again as in the public health gains of the last century the medical profession can be expected to lead the way. Nearly all the great achievements of mankind in science,

technology, art and literature have come from a relatively small area of the earth and a relatively small population group. From northern and western Europe, the lands about the Mediterranean, and southwestern Asia, have come nearly all the great discoveries and inventions in science and technology, and all that we call modern civilization. The population of this area and their descendants in other parts of the world represent the greatest concentration of desirable and exceptional genes. These treasures of hereditary abilities have been depleted by the losses of the two World Wars and further depreciation of these valuable human resources continues in time of peace. Man has actually conserved his forests and wild life better than himself, and has placed pine trees and beavers ahead of the human being, the great pool of genius and energy that produced our modern civilization. There is a cynical old story that it took a million years to make a man out of a monkey and that a women can reverse the process in ten minutes. Our present social organization does not work that fast but it is turning man backward from a biological standpoint. As a matter of plain necessity this backward trend will be reversed by real advances in the field of eugenics. Furthermore, the expansion of eugenics as a science must be translated into social and political action that will make it effective.

Summary

It appears, therefore, that the main trends of medicine in the next fifty years at least, will be toward the prevention and treatment of the deteriorative conditions, increase in the individual life span; the prevention and treatment of trauma; effective treatment of malignant disease; the prediction and control of the sex of offspring; the extension of medical and obstetrical care to all parts of the world; the further development of tissue and organ transplantation and replacement; further advances in the control and treatment of infectious diseases; the development of atomic, interspace, and environmental medicine; improvement in the treatment of mental conditions; and the expansion of eugenics and its practical application.

EDITORIALS

Coronary Heart Disease

WHEN was coronary heart disease first diagnosed? Hearts have been beating throughout many thousands of years; blood has been spurting from open wounds ever since the cavemen's time, yet our real knowledge of the blood-circulation is only a few centuries old. The detection of coronary heart disease is of still younger date.

Reading the old chronicles and medical records one often finds accounts of diseases or sudden deaths whose chief symptom was acute pain in the chest or shortness of breath. Though it is very difficult and dangerous to stamp these historical accounts with the modern label of coronary disease, there seems to be a general agreement on the nature of the attack of sickness that Henry, the father of Edward Hyde, the Earl of Clarendon, suffered about 1632. As the son described it, his father became pale, as if he were dead, and had a sharp pain in his left arm for almost a quarter of an hour. No doubt that future analysts of other historical records will detect earlier accounts of similar attacks, but for us this seems to be the earliest lay record of what we know now as coronary disease.

The first medical record of a killing dyspnea is included in the 1700 edition of a work ("Sepulchretum") of Bonet who mentioned that an elderly fat poet died from shortness of breath in a few minutes. It happened that the body was opened after death, and the coronary vessels of the poet's heart were found calcified. But nobody suggested that there might have been any relation between the death and the calcified arteries. A few years later, in 1707, the famous Morgagni, the father of pathological anatomy, had an opportunity to observe a case of death from a disease which appeared under symptoms of what we now call a heart attack.

It was the English William Heberden who in 1768 began to use the term "angina pectoris" for such attacks which he considered, however, just a "disorder of the breast," being unaware that the chest pain was the result of heart trouble. His paper on angina pectoris appeared in 1772. It caused contention between the English and the French who stated that their compatroit, a certain Rougnon de Magny, of Besançon, should get the laurel for the first description on "angina pectoris."

A few years later, in 1799, Parry wrote a paper on the symptoms and causes of "syncope anginosa," as he termed the ailment, and referred to a letter of Jenner, the same one who introduced the smallpox vaccination. In this letter Jenner expressed his opinion that angina pectoris might be a form of heart disease. Soon afterwards, in 1809, Allan Burns suggested that this heart disease is perhaps caused by an obstruction of the coronary arteries. (It may be inserted at this point that Auenbrugger's invention was not yet generally known, and the use of auscultation as a diagnostic method began to spread after 1806 only under the influence of Corvisart, the father of cardiology.)

In 1879 William Murrell began to treat angina pectoris with nitroglycerine. In the subsequent years a series of pathological studies brought us closer to the better understanding of the nature of the suspected coronary obstruction. These studies started in Wien where Adam Hammer (1878) prepared his classical record of coronary thrombosis; then, they were continued by such men as Weigert (1880), Cohnheim and Ziegler (1881), Huber (1882), Leyden (1884), Huchard (1890), and others.

The first complete description of coronary thrombosis appeared in 1910 as a result of

the clinical studies of W. P. Obrastzow and N. D. Straschesko. But the most striking and accurate record of the clinical features of sudden coronary obstruction was left by the American James Bryan Herrick (died in 1954), whose first article on angina pectoris was also published in 1910 while his classical record came out in 1912 in the 59th volume of the Journal of American Medical Association. (For an appreciation of his work see *The Master Cardiologist,* an editorial by Col. J. M. Phalen in the MILITARY SURGEON v. 114, p. 387-8, 1954.)

The early years of the twentieth century saw the invention of Einthoven's apparatus (1904) and its use in the diagnosis of heart diseases (1906). It is the luck and merit of H. E. B. Pardee (1920) to be the first to observe and interpret the electrocardiographic changes of the human heart caused by coronary obstruction. Further advances in medicine have led to the more and more effective treatment of coronary heart disease. While there have been great strides in the diagnosis and treatment of this disease there yet remains much to be learned in the way of prevention. We look hopefully to the future when the causative factors of coronary disease will be fully known and steps can be taken toward its prevention.

Code of Conduct *for POW's; Is Code for All Americans*

I

I am an American fighting man. I serve in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

A member of the Armed Forces is always a fighting man. As such, it is his duty to oppose the enemies of the United States regardless of the circumstances in which he may find himself, whether it is active participation in combat, or as a prisoner of war.

II

I will never surrender of my own free will. If in command I will never surrender my men while they still have the means to resist.

As an individual, a member of the Armed Forces may never voluntarily surrender himself. When isolated and he can no longer inflict casualties on the enemy, it is his duty to evade capture and rejoin the nearest friendly forces.

The responsibility and authority of a commander never extends to the surrender of his command to the enemy while it has power to resist or evade. When isolated, cut off or surrounded, a unit must continue to fight until relieved, or able to rejoin friendly forces, by breaking out or by evading the enemy.

III

If I am captured I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will never accept parole nor special favors from the enemy.

The duty of a member of the Armed Forces to continue resistance by all means at his disposal is not lessened by the misfortune of capture. Article 82 of the Geneva Convention pertains and must be explained. He will escape if able to do so, and will assist others to escape. Parole agreements are promises given the captor by a prisoner of war upon his faith and honor, to fulfil stated conditions, such as not to bear arms or not to escape, in consideration of special privileges, usually release from captivity or lessened restraint. He will never sign or enter into a parole agreement.

IV

If I become a prisoner of war, I will keep faith, with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not I will obey the lawful orders of those appointed over me and will back them up in every way.

Informing or any other action to the detriment of a fellow prisoner is despicable and is expressly forbidden. Prisoners of war must avoid helping the enemy identify fellow

prisoners who may have knowledge of particular value to the enemy, and may therefore be made to suffer coercive interrogation.

Strong leadership is essential to discipline. Without discipline, resistance, and even survival may be impossible. Personal hygiene, camp sanitation, and care of sick and wounded are imperative. Officers and noncommissioned officers of the United States will continue to carry out their responsibilities and exercise their authority subsequent to capture. The senior line officer or noncommissioned officer within the prisoner of war camp or group of prisoners will assume command according to rank (or precedence) without regard to Service. This responsibility and accountability may not be evaded. If the senior officer or noncommissioned officer is incapacitated or unable to act for any reason, command will be assumed by the next senior. If the foregoing organization cannot be effected, an organization of elected representatives, as provided for in Articles 79-81 Geneva Convention Relative to Treatment of Prisoners of War, or a covert organization, or both, will be formed.

V

When questioned, should I become a prisoner of war, I am bound to give only name, rank, service number and date of birth. I will evade, answering further questions to the utmost of my ability. I will make no oral or written statements disloyal to my country and its allies or harmful to their cause.

When questioned, a prisoner of war is required by the Geneva Convention and permitted by this Code to disclose his name, rank, service number and date of birth. A prisoner of war may also communicate with the enemy regarding his individual health or welfare as a prisoner of war and, when appropriate, on routine matters of camp administration. Oral or written confessions true or false, questionnaires, personal history statements, propaganda recordings and broadcasts, appeals to other prisoners of war, signatures to peace or surrender appeals, self criticisms or any other oral or written communication on behalf of the enemy or critical or harmful to the United States, its allies, the Armed Forces or other prisoners are forbidden.

It is a violation of the Geneva Convention to place a prisoner of war under physical or mental torture or any other form of coercion to secure from him information of any kind. If, however, a prisoner is subjected to such treatment, he will endeavor to avoid by every means the disclosure of any information, or the making of any statement or the performance of any action harmful to the interests of the United States or its allies or which will provide aid or comfort to the enemy.

Under Communist Bloc reservations to the Geneva Convention, the signing of a confession or the making of a statement by a prisoner is likely to be used to convict him as a war criminal under the laws of his captors. This conviction has the effect of removing him from the prisoner of war status and according to this Communist Bloc device denying him any protection under the terms of the Geneva Convention and repatriation until a prison sentence is served.

VI

I will never forget that I am an American fighting man, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.

The provisions of the Uniform Code of Military Justice, whenever appropriate, continue to apply to members of the Armed Forces while prisoners of war. Upon repatriation, the conduct of prisoners will be examined as to the circumstances of capture and through the period of detention with due regard for the rights of the individual and consideration for the conditions of captivity.

A member of the Armed Forces who becomes a prisoner of war has a continuing obligation to remain loyal to his country, his Service and his unit.

The life of a prisoner of war is hard. He must never give up hope. He must resist enemy indoctrination. Prisoners of war who stand firm and united against the enemy will aid one another in surviving the ordeal.

Around the World

By
CLAUDIUS F. MAYER, M.D.

QUACKERY has a boom time in France these days. The doctors complain that many of their prospective patients are snatched away by illegal practitioners, *pseudo-doctors, anti-doctors and mystics.* There are now about 38,000 licensed practitioners *in France,* but many more quacks are in existence who find a very remunerative business, especially around the big towns. One quack who was recently arrested confessed that he has been earning more than $10,000 a month. Some of the illegal doctors became so widely known that special motor-coach services were organized to and from their consulting rooms, and refreshment places were set up for the clients at various points of the route.

The illegal "healers" are vigorously prosecuted by the French courts, and the fines they pay are assigned, ironically, to a fund for the aged and needy regular doctors:—small crumbs from the rich table of pendulum-swingers, mesmerists, clairvoyants, bone-setters, big quacks and little messiahs whose business assumed gigantic proportions after World War II.

The late War also caused other problems in France, political as well as economical. Among them the care of disabled veterans is outstanding. The *humanitarian spirit of France* had always been exemplary. This spirit moved Louis XIV to build the Hôtel des Invalides in Paris as a home for his wounded officers and men. His 17th century idea now took on new glamor. Owing to the efforts of the medical director of this home, a part of the historic old building was overhauled and completely equipped to serve as the first *French center for paraplegic veterans.* The new center, which will care for 80 disabled veterans, was opened in the latter part of May.

Equal care is given to the needs of veterans in other parts of the French Union. Thus, since 1950, travelling prosthetic workshops are crossing various parts of French North Africa. Each mobile unit consists of two specially equipped trucks for furnishing and repairing artificial limbs and other prosthetic appliances for disabled veterans. The *prosthetic "Rehab-Mobiles"* covered more than 52,000 kilometers *in Morocco* alone, having provided assistance to 4,900 war-disabled persons, 300 of whom live in the back country.

Indeed, the war victims are well provided in all parts of the world as a world-wide survey may easily show. *In Russia the war veterans* are treated as well as the victims of industrial accidents. At the June 1955 meeting of the International Labor Organization, Mrs. Muravyova, U.S.S.R. Minister of Social Security, pointed out that prosthetic devices and rehabilitation treatment are entirely free to Russian war victims while the injured industrial workers receive the same appliances at low cost. Eighty percent of the Russian disabled are now employed according to Madame Minister.

Modern medicine is turning everywhere more and more toward the old Hippocratic ideals that take into consideration the total man, i.e. the man in his physical, biological, social and mental correlations with the universe. The preservation of health of the occupied man, of the office employee and the industrial worker cannot be achieved without an analysis and understanding of the multilinear ties of the individual with his environment. This evident holistic tendency in environmental and occupational medicine is manifested at many points. Thus, the British Medical Research Council and the Department of Scientific and Industrial Research (of England) recently held a joint conference for the analysis of factors in individual efficiency in industry. It discussed chiefly the effects of environmental situations and of

continuous work on performance, the problems of training, the industrial application of research results, etc.

The study of occupational health was further advanced in England by a grant of £15,000 to the London School of Hygiene. This is the support given by the Rockefeller Foundation for the study of industrial conditions hazardous to health.

The roster of English societies contains one with the title of *"Medical Association for the Prevention of War."* At its late meeting that association analyzed the medical effects of radioactive explosions; this now seems to be a favored topic of all medical assemblies. Another group of English people has recently associated itself with the study of cerebral palsy. It is interesting that the so-called *Little Committee* was established approximately 100 years after the publication of the work in which Dr. Little described cerebral diplegia.

During midsummer (late July and early August) *a peculiar epidemic* attacked more than 100 members of the *Royal Free Hospital at Liverpool Road, London.* The infection was first thought to be glandular fever, but then there were many unusual features to suspect that a new virosis was rampant. In the new disease the liver and the spleen, and the lymph nodes were affected, and a large number of the sick had signs and symptoms of encephalomyelitis or polyneuritis. The clinical course of the ailment was usually mild. After an incubation period of 5-7 days there was malaise, mild sore throat, pain of varying severity under both costal margins, also in the neck, the back and the limbs. Headache without meningism was common. Early in the course many patients complained of transient or persistent vertigo, and slight neural deafness. As soon as the second day of illness, paresis of some cerebral nerves may have appeared. In some cases it was delayed until the third week of illness. Other central symptoms included paresthesia, numbness, neuralgia, motor troubles, and drowsiness. The blood-picture was not characteristic, and the Paul-Bunnel test was negative.

An important international meeting, the seventh *International Congress of Comparative Pathology* was held in Switzerland. The congress met in Lausanne from May 26-31. One of the main topics of the discussions was virus diseases transmissible from animals to man. For this type of virus infection Lépine, of the Pasteur Institute of Paris, proposed the term *"virozoonosis."* Members of the Congress also learned that the study of ornithosis has especially progressed in Holland, the country of pigeons and amateur pigeon-breeders who established a policlinic for their beloved birds and a research institute where *the diseases of race pigeons* could be studied.

Sydney, Australia, was the site of the *Asian-Pacific regional conference on tuberculosis.* The meeting was arranged by the Australian National Association for the Prevention of Tuberculosis. People from all the countries which are members of the Colombo Plan sent representatives to this conference held from August 15-20.

That medical activities are increasing in the Pacific area is also shown by the birth of a new medical journal in that area of the world. The new journal, entitled the *Papua and New Guinea Medical Journal,* will be issued quarterly as the official bulletin of the Department of Public Health of this British territory. It is from the press of the Government Printer in Port Moresby. Another new journal reflects the growing interest in the medical and social problems created by global alcoholism. The newly launched publication, called *International Journal on Alcohol and Alcoholism,* is the organ of the recently created International Institute for Research on Problems of Alcoholism.

The Swedish Food Institute in Alnarp found that the valuable B and C vitamins of the milk are quickly destroyed by sunlight. According to experiments which the Dairy Technological Laboratory of the Institute carried out, 95% of the vitamin contents of

the bottled milk, which is kept on sun-exposed shelves of kitchens and grocery stores, is ruined after 6-7 hours' stay in sunlight. The logical conclusion has been drawn therefore that paper containers are the best for the conservation of this type of market milk.

Among the famous medical men, dead or alive, mentioned lately in the global press we find *Carl Gustave Jung,* the Swiss physician and analytical psychologist, a man of great encyclopedical knowledge who at Küssnacht just celebrated his 80th birthday. We are also in sympathy with *Albert Schweitzer,* another octogenarian whose eyesight is failing. Only the surgeon's knife could save him, but he is unwilling to put himself into a surgeon's hand.

Andrija Stampar, president of the Jugoslav Academy of Sciences, has been awarded the *Léon Bernard Foundation Prize and medal* in recognition of his outstanding contributions and practical achievements in the field of social medicine. This is the highest distinction a medical man can receive in a career devoted to public health and social progress. The prize was created in 1939 by the League of Nations' Health Committee in honor of its distinguished member, the French doctor Léon Bernard (1872-1934). Since 1951 the prize is awarded by the World Health Organization. The previous recipients of the award were Dr. René Sand, of Belgium; Dr. Winslow; Dr. Frandsen, of Denmark, and Dr. Jacques Parisot, of France.

We hear with sorrow that *Sir Reginald Bond,* formerly Medical Director-General of the British Navy, died on July 27, 1955, at the age of 83. For a while (1920-1926) he was editor of the Journal of the Royal Naval Medical Service. Many of us will feel the loss of *Max Neuburger,* of Wien, and *Erik Waller,* of Lidköping, Sweden. Dr. Waller, a surgeon and the librarian of the Swedish Medical Society, was also a private collector of old medical books. The catalogue of his priceless library, which numbers about 20,000 items, is about to be published in two volumes. This year the Russian medical profession was deprived of the services of two leading pathologists: the 81-year old *Alexei Ivanovich Abrikosov,* author of numerous books and articles and the founder of Arhiv patologii; and the 73-year old *Boris Nesterovich Mogil'nicky,* professor of pathology at the Second Moskva Medical Institute.

Nowadays much is written about Africans and *the psychology of Africans.* We remember an ethno-psychiatric monograph (J. C. Carothers) issued not so long ago as a WHO pamphlet to relate the normal and pathological psychology of African natives. Few natives of the Dark Continent are now entirely untouched by western influence. Yet, the morphological and electro-physiological studies made on the brains of natives do not answer the questions the white man would like to settle. However, the studies make it evident that the *incidence of mental disease is ten times lower in African tribes* than in those blacks exposed to western culture or settled down in Western Europe and in the United States. Mental disease is thus the price of *"detribalization."*

Psychological studies of the Africans (by Banks) also prove that *our economic standards cannot be applied* all over the world. For instance, malnutrition is not necessarily an expression of poverty *in Africa.* The Africans interpret life differently. If an African gets a little extra money he does not invest it the way an American economist would advise. He may spend it upon arranging a splendid funeral for a relative who might have died years ago; or, he may buy 6-7 sets of clothes while he continues to live in overcrowded quarters with his starving family. After all, PRESTIGE is measured differently in Africa! . . . *Multa paucis!*

SUSTAINING MEMBERS

It is a privilege to list the firms who have joined The Association of Military Surgeons as Sustaining Members. We gratefully acknowledge their support.

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ASSOCIATION NOTES

Time items of general interest are accepted for these columns. Deadline is 3rd of month preceding month of issue.

Department of Defense

Ass't Secretary (Health & Medical)—HON. FRANK B. BERRY, M.D.

Deputy Ass't Sec'y—HON. EDW. H. CUSHING, M.D.

INFLUENZA IMMUNIZATION

All Armed Forces personnel will again be immunized for influenza this year. This is the second year that the extensive use of influenza vaccine will have been made.

MALE NURSES

Male nurses can now be commissioned in the Reserve component of the Armed Forces. This became possible when President Eisenhower signed the bill which was introduced into the House by Representative Bolton of Ohio. Edward L. T. Lyon, Mineola, L.I., is the first male nurse to be commissioned in the Officer Reserve of the Army.

DEPUTY DIRECTOR, AFIP

Lieut. Colonel Frank M. Townsend, USAF (MC), was recently appointed Deputy Director of the Armed Forces Institute of Pathology, Washington, D.C. He is also serving as consultant to the Air Force Surgeon General in aeromedical and pathology research.

Colonel Townsend has had a broad experience in pathology in both the military service and civilian life. He is co-author of several scientific papers.

Army

Surgeon General—MAJ. GEN. SILAS B. HAYS

Deputy Surg. Gen.—MAJ. GEN. JAMES P. COONEY

GENERAL COONEY PROMOTED

The Deputy Surgeon General, James P. Cooney, has been promoted to Major General. Prior to his present position General Cooney was Commandant of the Medical Field Service School, Fort Sam Houston, Texas. He is one of the nation's leading authorities on atomic warfare medicine.

PROMOTED TO BRIGADER GENERAL

Harold C. Lueth, Professor of Clinical Medicine at the University of Illinois, has been promoted to the grade of brigadier general in the Army Reserve. He has been appointed as the eighth member of the Army Medical Service Advisory Council on Reserve Affairs.

General Lueth has had an extensive experience in both military and civilian professional and administrative fields. From 1946-1952 he held the position as Dean and Professor of Internal Medicine at the University of Nebraska College of Medicine.

In 1940 the Association of Military Surgeons awarded him Honorable Mention in the Wellcome Prize Contest; this carries Life Membership in the Association.

ADVISORY COUNCIL MEETING

The Army Medical Service Advisory Council on Reserve Affairs will meet in the Office of The Surgeon General, November 19-20 to discuss "Emergency Care of Casualties." Maj. General Isidor S. Ravdin, University of Pennsylvania, will preside at the meeting.

SGO ASSIGNMENT

Colonel Byron L. Steger, MC, is now Chief of the Education and Training Division in the Office of the Surgeon General. He has succeeded Colonel Charles L. Leedham who retired to accept the position as Director of Education at the Frank E. Bunts Education Institute which is affiliated with the Cleveland Clinic Foundation.

Colonel Steger is also Director, Interagency Institutes for Federal Hospital Administrators which has been holding semiannual sessions in Washington, D.C. The XI Interagency Institute is now in session at the Walter Reed Army Medical Center.

Colonel James H. Gordon, MC, has assumed duties as Assistant Chief, Preventive Medicine Division of the Surgeon General's Office. Colonel Gordon received a master of public health degree from the University of California in 1950. He has had extensive experience in the field of preventive medicine.

Lt. Colonel Myra L. McDaniel has been appointed Chief of the Occupational Therapist Section and Assistant Chief of the Army Medical Specialist Corps. She succeeds Lt. Colonel Helen R. Sheehan who has been transferred to Letterman Army Hospital to become Chief of the Occupational Therapy Department there.

CONSULTANT IN PHARMACY

Major William L. Austin, MSC, is the first full-time consultant in pharmacy to be appointed by the Surgeon General of the Army. He has received three degrees from the University of Michigan: BS (chemistry) 1936, AM (education) 1938, and BS (pharmacy) 1941. In 1950 Northwestern University conferred the degree of master of hospital administration on him.

NURSE HONORED

Captain Ruth E. Dickson, ANC, chief nurse of the Army Hospital, Livorno, Italy, was recently awarded the Associate Royal Red Cross by Her Britannic Majesty's government for service to British Commonwealth Forces in Korea while she was chief nurse of the 8055th Mobile Army Surgical Hospital. This decoration is comparable to the United States Distinguished Service Cross.

NURSES PROMOTED

Five Army Nurse Corps officers were promoted to the rank of lieutenant colonel. They are: Helen M. Abramoska (Fort Sam Houston, Texas); Carrie E. Barrett (Walter Reed Army Hospital); Mary C. Bateman (Army and Navy Hospital); Lucy E. Jacobson (Fort Belvoir, Va.); Ethel A. Lamansky (Letterman Army Hospital).

ATTENDS PHARMACY CONVENTION

Colonel Bernard Aabel, Chief of the Army Medical Service Corps, attended the 1955 convention of the Federation International Pharmaceutique in London in September. Colonel Aabel is a registered pharmacist.

MEDICAL SERVICE HISTORY

The history of the Army Medical Service during World War II will be recorded in at least forty volumes the first of which "The Physiologic Effects of Wounds" was distributed in 1953. The second volume, "United States Army Dental Service in World War II," is now being distributed. Colonel George F. Jeffcott, DC, is the author of this volume.

Colonel John B. Coates, Jr., Editor-in-Chief, Historical Unit, Army Medical Service, states that five more volumes will appear in the next few months. These are to be: "Environmental Hygiene," "Personal Health Measures and Immunization," "Hand Surgery," "Vascular Surgery," and "Hospitalization and Evacuation in the Zone of the Interior."

All books will be available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

MILITARY MEDICINE COURSE

A 39-week course in Military Medicine and Allied Sciences opened at Walter Reed Army Medical Center in September with

twelve students: Lt. Col. Carl N. Ekman; Majors Glen K. Arney, Michael J. Davis, John R. Gibson, Sidney L. Marvin, Thomas L. Robbins, John H. Draheim, Harry F. Hurd, and William H. Wright; Captains Richard F. Barquist, Michael P. Dacquisto, and Thomas W. Sheehy.

The Director of the course is Major Marion E. McDowell, Army Medical Service Graduate School.

LEGION OF MERIT AWARD

Lt. Colonel Edwin D. McMeen, Director of the Supply and Service Division, Walter Reed Army Medical Center, has been awarded the Legion of Merit for outstanding service in Korea. The presentation was made by Maj. General Leonard D. Heaton, commander of the Center.

Colonel McMeen entered the Army in 1934 as an enlisted man. He has seen service in Japan, Korea, and the Philippine Islands.

VIRUS DISCOVERER HONORED

Dr. Maurice R. Hilleman, assistant chief of the Department of Virus and Rickettsial Diseases, Army Medical Service Graduate School, has been awarded the Exceptional Civilian Service Award, the highest honor bestowed on civilian personnel by the Department of the Army. The presentation was made by Major General Leonard D. Heaton, commander of the Walter Reed Army Medical Center.

Dr. Hilleman discovered the "R I viruses" which are causative organisms in certain types of respiratory diseases. It is stated that four out of every ten new Army recruits during winter training become ill because of this group of viruses.

ASSIGNMENT WRAMC

Major Ruth Edenfield, ANC, is the new Director of the Clinical Specialist Course at Walter Reed Army Medical Center. She came to this position from an assignment in Eritrea where she was chief nurse at an Army hospital.

The Clinical Specialist Course is designed to prepare enlisted men and women for the field of practical nursing.

WE NEED MORE OF THIS

At the Brooke Army Medical Center, Fort Sam Houston, Texas, of which Major General William E. Shambora is commander, there is a special emergency medical course being given which will eventually train over 1,000 officers of all grades how to provide necessary care when doctors are not available. The course goes beyond that of first aid. In time of mass casualties knowledge of what to do and what not to do will save many lives and prevent more serious injury to the injured. These courses are limited to 25 persons in each class in order to permit close guidance by the instructors.

DENTAL OFFICER AUTHOR

Colonel Joseph L. Bernier, Chief of the Oral Pathology Branch of the Armed Forces Institute of Pathology has recently published his fifth book on Oral Pathology. "Management of Oral Pathology" published by C. V. Mosby Co., St. Louis has already been accepted by several dental schools as a standard teaching text.

In 1951 Colonel Bernier was the recipient of the Louis Livingston Seaman Prize awarded annually by the Association of Military Surgeons of the United States.

Navy

Surgeon General—Rear Adm. Bartholomew W. Hogan

Deputy Surgeon General—Rear Admiral Bruce E. Bradley

SURGEON GENERAL ELECTED DELEGATE

Rear Admiral Bartholomew Hogan, Surgeon General of the Navy, was elected delegate at large of the American Hospital Association's House of Delegates at its recent meeting. The term is for three years.

ASSIGNMENTS

Rear Admiral Thomas F. Cooper, MC,

has assumed the duties of Inspector General Medical Department Activities.

Rear Admiral French R. Moore, MC, succeeded Admiral Cooper in the position of Assistant Chief for Planning and Logistics.

Captain Edward C. Kenney, MC, has been assigned as commanding officer of the Naval Hospital, National Naval Medical Center, Bethesda, Maryland. Rear Admiral Lamont Pugh, former Surgeon General of the Navy, is in command of the Center.

Captain Gordon B. Tayloe, MC, who was relieved by Captain Kenney, has been assigned as the Assistant District Medical Officer, 5th Naval District.

DENTAL CORPS NOTES

Of the students enrolled in dental colleges there are 509 Ensigns 1995 who will graduate in 1956. This is the maximum number allowed the Navy; therefore, no additional commissions will be issued in this class.

The class graduating in 1957 has 268 Ensigns 1995 commissioned; that of 1958 has 222; that of 1959 has 28. Applications for commissions are being processed for these last three classes.

During the past few months, there has been a considerable increase in the number of reserve dental officers on active duty who have requested transfer to the Regular Navy.

WAVES AFFORDED NURSE TRAINING

An opportunity to earn while learning a profession which will later qualify them for a commission in the Nurse Corps of the Navy is being afforded to ten Hospital Corps Waves. They are undergoing basic nursing education at civilian universities.

Eligibility for selection for this program included the requirement that applicants be high school graduates with a standing in the upper half of their graduating class, and that they must have been a member of the Hospital Corps for at least one year, six months of which must have been on ward duty engaged in the care of patients under the immediate supervision of officers of the Nurse Corps.

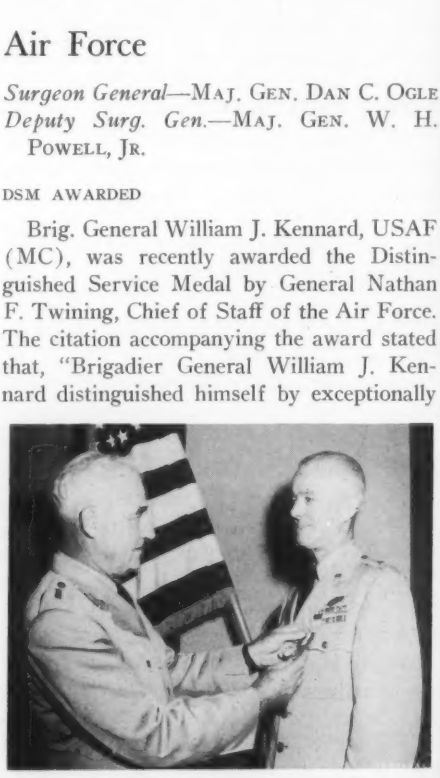
After successful completion of a four year course they will be required to serve in the Nurse Corps of the Navy for an equal length of time. This will be in the grade of Ensign.

Air Force

Surgeon General—MAJ. GEN. DAN C. OGLE
Deputy Surg. Gen.—MAJ. GEN. W. H. POWELL, JR.

DSM AWARDED

Brig. General William J. Kennard, USAF (MC), was recently awarded the Distinguished Service Medal by General Nathan F. Twining, Chief of Staff of the Air Force. The citation accompanying the award stated that, "Brigadier General William J. Kennard distinguished himself by exceptionally



GEN. TWINING, USAF, AWARDS DSM TO BRIG. GEN. W. J. KENNARD, USAF (MC)

meritorious service to the United States while serving in a position of great responsibility from 1 December 1951 to 14 October 1954. As Chief, Medical Branch and Senior Medical Officer of the North Atlantic Treaty Organization, Supreme Headquarters, Allied Powers in Europe, General Kennard established vital medical services and medical logistic programs to support the combined forces of the Allied Command, Europe. He developed the organization of a Medical

Committee which planned for the total health resources of the NATO nations. By his personal initiative, tact, and extensive knowledge of medical problems, General Kennard gained the assistance and cooperation of all countries concerned. In discharging his heavy responsibilities in such an outstanding manner, General Kennard has made a substantial contribution to the national security, and his actions reflect the highest credit upon himself and the United States Air Force."

General Kennard has retired from the military service and is now Assistant Director, American Medical Association, Washington, D.C. office.

GENERAL TWITCHELL TRANSFERRED

Brig. General Harold H. Twitchell has been transferred from the Office of the Surgeon General where he was Director of the Directorate of Professional Services to Mitchell Air Force Base, New York, where he has assumed the position of Surgeon, Continental Air Command.

Colonel Victor A. Byrnes has succeeded General Twitchell in the position of Director of Professional Services. Colonel Byrnes is the recipient of the Gorgas Medal which is announced on page 480 of this issue of MILITARY MEDICINE.

CHIEF CLINICAL MEDICINE

Colonel Richard S. Fixott, USAF (MC), has been appointed Chief of Clinical Medicine at the Air Force School of Aviation Medicine, Randolph Field, Texas.

In 1944 he went to China as deputy surgeon of General Chennault's Flying Tigers. After World War II Colonel Fixott returned to Portland, Oregon, his home, to practice his specialty of eye diseases. His interest for the military service brought him back to the Air Force as a regular officer in 1950.

SAFETY HARNESS

Safety belts for the sitting passengers in airplanes have been used for years but a satisfactory device for the litter patient has only recently been developed for the Air Force by New York University engineers.

The harness is the result of a year's scientific study and experimentation. Four main straps join below the patient's chest. Two of these run in a "V" across the chest and over the shoulders. The third extends across the abdomen and legs. The other runs laterally around the waist. Straps extend under the patient's body as well as above it.

The device permits easy access to any part of the patient by medical attendants, and also permits the use of blankets, tourniquets, infusion tubes, bed pans, and casts. To allow for quick removal of the harness, a release mechanism has been placed at the point where the straps meet above the patient's chest. For psychotic patients, a key locking feature is added.

Public Health Service

Surgeon General—LEONARD A. SCHEELE, M.D.

Deputy Surg. Gen.—W. PALMER DEERING, M.D.

SANITARY ENGINEER OFFICER EXAMINATION

A competitive examination, for appointment of Sanitary Engineer Officers to the Regular Corps of the Public Health Service will be held in various places in the country on January 10, 11, and 12, 1956.

Application forms may be obtained by writing to the Chief, Division of Personnel, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D.C. The deadline for filing applications is December 9, 1955.

ATTENDS PHARMACY CONVENTION

Mr. Thomas Foster, Pharmacist Director of the Public Health Service on duty in the Office of the Surgeon General, attended the recent convention of the Federation International Pharmaceutique in London.

APPOINTMENT

Dr. J. Roy Doty of Chicago, Secretary of

the Council on Therapeutics, American Dental Association, has been appointed to serve on the National Advisory Dental Research Council. This Council composed of twelve members advises and makes recommendations to the Surgeon General of the Public Health Service regarding activities of the National Institute of Dental Research which is one of the seven Institutes making up the National Institutes of Health at Bethesda, Maryland.

Other new members of the Council are Mr. Edward Y. Blewett, Dean, College of Liberal Arts, University of New Hampshire; and Dr. Joseph F. Volker, Dean of the School of Dentistry and Director of Research and Graduate Study, University of Alabama Medical Center, Birmingham.

AIR POLLUTION

Ten grants have been made by the Public Health Service in the starting of a special program of research into air pollution problems. For many years some of us have said "it is as free as the pure air." In some localities now we must modify that since free pure air is not always available. Our industrialization with its automobiles and large manufacturing plants is contaminating this air and who knows what damage there may be to the vital pulmonary organs or tissues of the body that may be recipients of some of these noxious gases through the blood stream.

Dr. Scheele has said: "There has been increasing evidence that various types of air pollution may constitute a serious, widespread danger to human health. To what degree this is so, in just what way the human body may be damaged by different air pollutants in different concentrations, is therefore a matter of deep concern to us. These and other studies over the period of the next few years should provide us with some of the answers, which, we hope, will lead to partial or total elimination of some types of air pollution or suggest the possible controls which can be used to eliminate their deleterious effects."

Veterans Administration

Chief Medical Director—WILLIAM S. MIDDELTON, M.D.

Deputy Chief Med. Dir.—R. A. WOLFORD, M.D.

NEW AREA MEDICAL OFFICE

The seventh area medical office will be opened at Columbus, Ohio, at a date to be announced later. The office will supervise VA medical activities in hospitals, domiciliaries and outpatient clinics located in Indiana, Kentucky, Michigan, and Ohio.

Dr. John G. Hood, presently manager of the VA hospital in the Bronx, has been appointed director of the new office.

The six area medical offices now in operation are located in Boston, Trenton, Atlanta, St. Louis, St. Paul, and San Francisco.

VETERAN POPULATION

The veteran population was estimated as 21,951,000 as of August 31, 1955 compared with 21,079,000 as of August 1954. The average daily patient load in both Veteran Administration hospitals and non-VA hospitals was 111,262 (108,059 in VA hospitals).

APPOINTMENTS

Dr. Paul M. Ireland, who has been director of the surgical service in the Washington Central Office has been appointed manager of the VA hospital in Ann Arbor, Mich.

Dr. Claud E. Carter, formerly manager of the VA hospital in Fort Bayard, New Mexico, has been appointed manager of the VA hospital at Butler, Pa.

Dr. Charles S. Livingston, has been transferred from the position of manager of the VA hospital at Butler to the same position in the VA hospital at Batavia, N.Y.

Dr. Jackson H. Friedlander has been appointed as Chief of the Residency and Internship Division at the Central Office in Washington, D.C. He succeeds Dr. Wilton M. Fisher who has resigned to return to the Public Health Service.

Miscellaneous

NEW ARMY UNIFORM

The compulsory date for the wearing of the new Army Green uniform has been postponed until October 1, 1957 instead of September 1, 1956 as announced in the July issue of this journal. On October 1, 1957, the new uniform will be required on duty for officers and warrant officers, except when they are performing duty under conditions requiring field clothing. The traditional Army Blue uniform will be required for officers and warrant officers when the uniform is worn on off-duty occasions.

The new green uniform will be authorized for optional wear for officers and enlisted men beginning October 1, 1956.

As of October 1 this year Army officers and warrant officers must wear standard uniforms of green blouses and "pink" slacks except when in troop formation or when on duty in the field.

ELECTRICAL TECHNIQUES CONFERENCE

The Eighth Annual Conference on Electrical Techniques in Medicine and Biology will be held at the Shoreham Hotel, Washington, D.C., November 14-16. This is sponsored by the American Institute of Electrical Engineers, Institute of Radio Engineers and Instrument Society of America.

UNDERGRADUATE MEDICAL STUDENT AWARD

The Council on Undergraduate Medical Education of the American College of Chest Physicians is offering three cash awards annually for the best contributions prepared by undergraduate medical students on any phase in the diagnosis and treatment of chest diseases (heart or lungs). The first prize will be $250; the second prize, $100; and the third prize, $50. Further information can be obtained from the Executive Director, 112 East Chestnut Street, Chicago 11, Ill.

Honor Roll

The following sponsored one or more applications for membership in the Association during the month of September, 1955:

Col. Bernard Aabel, MSC, USA
Col. Conrad Acton, MC, USAR
Col. Kenneth A. Brewer, MC, USA
Col. Roosevelt Cafarelli, MC, USA
Col. Henry Daine, MC, USA
Col. Merril Davenport, MC, USA
Brig. Gen. L. Holmes Ginn, Jr., MC, USA
Col. William D. Graham, MC, USA
Major Gen. M. E. Griffin, MC, USA
Lt. Col. James Hammill, MC, USA
Lt. Col. John H. Harris, MC, USA
Lt. Col. James B. Hartgering, MC, USA
Lt. Col. Bille Hennan, MC, USAR
Col. R. E. Hewett, MC, USA
Lt. Col. Thomas H. Hewlett, MC, USA
Capt. James M. Howland, MC, USA
Col. Paul M. Ireland, MC, USAR
Col. Francis P. Kintz, MC, USA
Dr. A. B. C. Knudson
Lt. Col. W. A. Kostecki, MC, USA
Lt. Col. F. F. Krauskopf, MC, USA
Col. George E. Leone, MC, USA
Lt. Col. Douglas Lindsey, MC, USA
Capt. Julian Love, MC, USN
Brig. Gen. James A. McCallam, USA, Ret.
Cdr. John C. McNerney, MC, USNR
Lt. Col. I. H. Marshall, MC, USA
Lt. Col. I. H. Martin, MC, USA
Major James B. Miller, MSC, USA
Major John B. Moyar, MC, USA
Capt. Doris L. Parker, AMSC
Med. Dir. D. W. Patrick, USPHS
Lt. Col. John Plum, MC, USA
Col. Roger G. Prentiss, Jr. MC, USA
Col. John W. Raulston, MC, USA
Col. Arthur J. Redland, MC, USA
Brig. Gen. Paul I. Robinson, MC, USA
Col. Louis F. Saylor, MC, USA
Col. Harlan Taylor, MC, USA
Silvio Tontar, M.D.
Col. Charles Young, MC, USA

AWARDS

Presented at the Honors Night Dinner, 62nd Annual Convention,
Hotel Statler, Washington, D.C., November 9, 1955

WELLCOME AWARD

The Sir Henry Wellcome Medal and Prize is awarded annually through the Association of Military Surgeons of the United States by the Trustees of the Wellcome Foundation in London for the best essay on

U. S. Army Photo

COL. WARNER F. BOWERS, MC, USA

a military medical subject. The award consists of a Silver Medal, a scroll, and an honorarium of $500. The winner of the 1955 award is Colonel Warner F. Bowers, MC, U. S. Army, Chief of the Department of Surgery, Brooke Army Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas. The title of his winning essay is "Surgical Treatment in Abdominal Trauma: A Comparison of Results in War and Peace." This will be published in the January 1956 issue of MILITARY MEDICINE.

Colonel Bowers is a native of Indiana. He received his medical degree from the University of Nebraska and later a Ph.D., from the University of Minnesota. He was chief surgical consultant in General MacArthur's Far East Command from 1946-1948, and was then appointed as chief surgical consultant to The Surgeon General of the Army.

HONORABLE MENTION in the contest for the Sir Henry Wellcome Medal and Prize was given to Dr. James M. A. Weiss, Director of the Malcolm Bliss Psychiatric Clinic, St. Louis City Hospital, St. Louis, Mo., for his essay entitled "The Role of the Psychotherapist in Military Training Centers." This will be published in the February issue of MILITARY MEDICINE. Honorary Mention is awarded life membership in the Association of Military Surgeons of the United States.

THE GORGAS MEDAL

The Gorgas Medal is awarded for distinguished work in preventive medicine for our Armed Forces. The award was established by Wyeth Laboratories of Philadelphia in memory of Major General William Crawford Gorgas whose work in preventive medicine made possible the construction of the Panama Canal. This award consists of a Silver Medal, a scroll, and an honorarium of $500.

The winner of the 1955 Gorgas Medal is Colonel Victor A. Byrnes, USAF (MC), Director of Professional Services, Office of the Surgeon General, U. S. Air Force. He made outstanding contributions in the research and furtherance of knowledge concerning retinal burns as a special hazard of the atomic bomb.

Colonel Byrnes is a native of Iowa and received his medical degree from the University and Medical College of Iowa. He

U. S. Air Force Photo

COL. VICTOR A. BYRNES, USAF (MC)

U. S. Navy Photo

LCDR VERA E. THOMPSON, NC, USN

entered the military service in 1929 and during his service specialized in ophthalmology, a field in which he has distinguished himself. He taught over 5,400 physicians various phases of aviation ophthalmology at the USAF School of Aviation Medicine, Randolph Field, Texas.

THE MAJOR LOUIS LIVINGSTON SEAMAN PRIZE

This prize is made possible through funds left the Association by Major Louis Livingston Seaman, Surgeon of the First U. S. Volunteers. It is given for some notable article published in MILITARY MEDICINE during the administrative year. The prize consists of a scroll and an honorarium of $160.

The winner of the 1955 prize is: LCDR Vera E. Thompson, NC, U. S. Navy, of the Bureau of Medicine and Surgery, Department of Navy, Washington, D.C. Her article "Rehabilitation in Neurosurgical Nursing" appeared in the April 1955 issue of MILITARY MEDICINE.

THE STITT AWARD

This award is given to the member of the Association of Military Surgeons who has done some outstanding work in the field of antibiotics. The award established in 1954 through the courtesy of Pfizer Laboratories, Brooklyn, N.Y., consists of life membership in the Association, a metal plaque and an honorarium of $500.

Brooks

DORLAND J. DAVIS, M.D.

This year the award has been made to Dorland J. Davis, Medical Director, National Microbiological Institute, National Institutes of Health, Bethesda, Maryland. Dr. Davis identified the Haemophilus aegyptius as the causative agent in epidemic conjunctivitis occurring in Georgia and Texas, and determined that the antibiotic streptomycin was specific for the disease.

Dr. Davis is a native of Illinois. He received his medical degree from Johns Hopkins University in 1937 and entered the U. S. Public Health Service in 1939. His research interests lie in the field of the epidemiological and etiological studies of infectious diseases, including trypanosomiasis, psittacosis, hepatitis, bacterial conjunctivitis, and influenza.

THE McLESTER AWARD

This award was established in 1954 by the J. G. Roerig Company Division, Charles Pfizer and Company, Inc., Brooklyn, New York, to honor the memory of Colonel James Somerville McLester, MC, USAR, Birmingham, Alabama. The award is presented to the person who is, or has been, at any time a commissioned officer, or of relative status in the Federal Medical Services, and who has done outstanding work in the field of Nutrition and Dietetics. The award consists of a metal plaque and an honorarium of $500.

The winner of the 1955 Award is Major Helen Burns Gearin, U. S. Army, Retired, of Orlando, Florida. She rendered invaluable service to the Army in the field of dietetics over a period of many years. She supervised the Army training course for hospital dietitians which supplied the graduate civilian dietitians needed to staff Army Hospitals in peacetime and war.

Major Gearin is a native of Massachusetts. She is a graduate of Simmons College, Boston, Mass., where she majored in foods and nutrition. For many years she was chief dietitian at Walter Reed Army Hospital, later becoming director of dietetics in the office of The Surgeon General of the Army. Major Gearin retired from the military service on August 31, 1955.

THE FOUNDERS MEDAL

The Founders Medal is awarded by the Executive Council of the Association of

U. S. Army Photo

MAJOR HELEN BURNS GEARIN, USA RET.

Chase

BRIG. GEN. LEIGH C. FAIRBANK, USA, RET.

U. S. Army Photo

BRIG. GEN. JOHN R. WOOD, MC, USA

U. S. Army Photo

COL. LOUIS F. SAYLOR, MC, USA

Military Surgeons of the United States to members of the Association for conspicuous service. The recipients of this medal and scroll which accompanies the medal for 1955 are:

Brig. General Leigh C. Fairbank, U. S. Army, Retired

Brig. General John R. Wood, MC, U. S. Army, Commandant, Army Medical Service Graduate School, Washington, D.C.

Colonel Louis F. Saylor, MC, U. S. Army, Office of The Surgeon General, Army.

Table Aids Reservists in Computing Gratuitous Points

The number of days active duty or active duty for training that a Reserve officer has in any one year determines what portion of the 15 days (gratuitous points) which may be credited in such year for service in an active Reserve component, the Comptroller General has ruled.

Reserve officers who try to hit the 50 retirement points requirement "right-on-the-nose" each year will be interested in the following table, which shows the number of gratuitous points to be awarded, based on various periods on active duty or active duty for training:

Days Active Duty or AD for training	*Gratuitous Points to be awarded*
0– 12	15
13– 36	14
37– 60	13
61– 85	12
86–109	11
110–133	10
134–158	9
159–182	8
183–206	7
207–231	6
232–255	5
256–279	4
280–304	3
305–328	2
329–352	1
353–365–366	0

BOOK REVIEWS

FINANCING HOSPITAL CARE FOR NONWAGE AND LOW-INCOME GROUPS. By the Commission on Financing of Hospital Care; edited by Harry Becker. 110 pages. Blakiston Division, McGraw-Hill Book Company, Inc., New York. 1955. Price $2.50.

This third volume of the report of the Commission on Financing of Hospital Care in the United States deals with the problem of providing adequate hospital services for those persons who because of age, inability to work, or low income are unable to pay for hospital care at the time of illness or to budget for care through prepayment. Blue Cross and other insurance have resulted in a sharp reduction in the number of patients seeking free hospital care. The growth of prepayment, according to the Commission, can be maintained through the development and extensive application of improved methods of enrollment and a broad community-wide pooling of risks and costs.

The Commission attempts to answer the question of "Who can be expected to pay for hospital care?" by determining the extent to which the population has prepayment coverage and the extent to which such coverage can be extended to persons now unable to pay for hospital care at the time of illness.

The Commission found that 89% of the civilian population are in the labor force or are dependents of persons in the labor force who have or can afford prepayment coverage. Among the 11% unable to pay for hospitalization are (1) the aged and their dependents; (2) the unemployed and their dependents; (3) the disabled and their dependents; (4) persons with insufficient income; (5) persons receiving public aid. As might be expected, this group often sustains long periods of illness, accrues large hospital bills, and imposes a financial burden on hospitals.

The book presents many tables and charts giving details about each of the five groups regarding age, income, number, coverage, employment, illness, and hospital utilization.

Municipal, county and state agencies are primarily responsible for the hospital care of persons unable to pay for the care they need. Over 6300 municipal and governmental agencies make direct arrangements with hospitals for the care of the needy. There are, in addition, 827 publicly owned hospitals, many of which provide care for the medically indigent.

Recommendations made by the Commission for resolving the problem of financing the hospital care of medical indigents include (1) increased local and state taxation for this purpose; (2) federal grants to the states to extend voluntary prepayment to such groups; (3) extension of the Federal Old Age and Survivors Insurance to cover such needy persons.

This book, together with Volumes I and II, makes a valuable reference for those interested in the extent and methods of financing of hospital care in our country.

LT. COL. MILTON C. DEVOLITES,
MSC, USA

CLINICAL DIAGNOSIS. By Elmer G. Wakefield, M.D., F.A.C.P. Consulting Physician Section of Medicine, Mayo Clinic and Assoc. Prof. of Medicine, Mayo Foundation. 1611 pages, 135 illustrations. Appleton-Century-Crofts, Inc., New York. 1955. Price: $22.50.

This text is divided into three sections. The first portion "consists of a discussion of the complaint, the history of the present illness and its relationship, if any, to the past and family history. An understanding of the patient and the complaints are broadened by physical examination of each topographic area of the body." The second portion "deals with diagnosis of systemic diseases." "Presentations of the systemic diseases are arranged in so far as possible according to their topographic manifestations and their etiology and pathology." Part three "deals with the constitution, the biology of the individual, or the body as a whole."

The author emphasizes what in his opinion is the distinct value of such a text, namely a source of reference "for diagnostic criteria of the common as well as uncommon diseases."

Dr. Wakefield has undertaken a formidable task but it is the reviewer's opinion that he has accomplished this in an admirable manner. The material seems to be surpris-

ingly complete considering the vast numbers of subjects discussed. Needless to state exhaustive discussion of any one subject is not undertaken. With the objectives in mind listed by the author, the text fills a needed place in medical literature. This is the type of book that can profitably be utilized by physicians and surgeons in the office, in the emergency room and in the library where "quick reference" is desired. The intern and resident will find it useful conveniently placed and within easy reach.

The material is well written, easy to follow, cohesive and concentrated. The correlation of anatomy and physical examination should prove useful.

The format is excellent and the illustrations are clear, well prepared and pertinent. A bibliography at the end of each chapter provides for more reading.

LT. COL. CHARLES S. CHRISTIANSON, MC, USA

PATHOLOGY FOR THE SURGEON. 7th Ed. By William Boyd, M.D., F.R.C.S., F.R.C.P. 737 pages, 547 illustrations. W. B. Saunders Co., Philadelphia and London. 1955. Price $12.50.

The fact that this popular book has gone through six editions with thirteen reprintings and translations into Portuguese, Spanish and Italian indicates its broad usefulness and wide appeal. For this edition the book has been entirely rewritten and a new title appears, stressing that the book is oriented toward the graduate rather than the undergraduate, the surgeon rather than the pathologist, and the young rather than the old.

Clinical material is emphasized throughout and of especial importance is the dynamic approach to each topic through pathological physiology rather than the static approach of "morbid anatomy." Stress has been laid on surgical conditions of importance today and the older conditions now infrequently seen are given a correspondingly lesser proportion of the space formerly used for such discussions as the late lesions of syphilis.

The customary procedure of first presenting the general topics of inflammation and repair, infections, gangrene, shock and burns, etc., is maintained, progressing then to special pathology by organ and system. Recent references are presented in the bibliography at the end of each chapter, and Boyd continues to show his fresh approach to such recent subjects as adrenal and other hormonal physiology, general nature of tumors and their characteristics of growth, fluid and electrolyte balance, etc.

Mechanical and technical matters of publishing the book have been well managed and the illustrations are sufficiently up to date. This book, in the opinion of the reviewer, has been and continues to be the outstanding contribution in this field where there have been so many competitors of late. Boyd's "Pathology for the Surgeon" is highly and unreservedly recommended to surgeons, young and old, to surgical aspirants, and to all who desire a good understanding of the nature of the findings in surgical diseases.

COL. WARNER F. BOWERS, MC, USA

MINOR SURGERY. By John E. Sutton, M.D., F.A.C.S., Ass't Clinical Professor of Surgery, Cornell University Medical College. 334 pages, illustrated. Blakiston Division, McGraw-Hill Book Co., New York. 1955. Price $7.00.

This volume is another in the handbooks for the General Practitioner Series. It is written as a guide for surgical pathology which may be treated in the home or office without complex equipment. Since the dividing line between "minor" and major" surgery is frequently crossed, this book presents the symptoms which should alert the practitioner to call in a general surgeon.

Within its scope this is an excellent book. The outstanding chapters are those on animal and human bites and first aid. Many old concepts are brought up to date. For example: the nitric acid treatment of bites is not used by the author; ACTH is considered the treatment of choice for snakebite; one should not wait for fluctuation to develop in considering whether to incise a felon.

The chapters include inflammatory reactions, traumatic lesions, lesions of the skin and subcutaneous tissue, sprains, bursitis, antimicrobials, anesthesia, first aid, pre and postoperative care, minor surgery in infants and children.

This well written book has over one hundred illustrations, an adequate index, and is to be highly recommended.

PHILIP H. SMITH, M.D.

A TEXT BOOK OF MEDICINE. 9th Ed. Edited by: Russell L. Cecil, M.D., ScD., Professor of Clinical Medicine Emeritus, Cornell University, New York; and Robert F. Loeb, M.D., Sc.D., D. Hon. Causa, LL.D., Bard Professor of Medicine, Columbia University, New York. Associate Editors: Alexander B. Gutman, M.D., Ph.D., Professor of Medicine, Columbia University, New York; Walsh McDermott, M.D., Livingston Farrand Professor of Public

Health and Preventive Medicine, Cornell University, New York; and Harold G. Wolff, M.D., Professor of Medicine (Neurology) Cornell University, New York. Illustrated. W. B. Saunders Company, Philadelphia, London. 1955. Price: $15.00.

A general description of this popular and well known publication is not indicated as this work has been a standard text for more than a quarter of a century.

As in previous editions, this new one reflects the untiring efforts of the editors to bring to the physician's desk the up-to-date and the current thinking in regard to the etiology, diagnosis and therapy of the diseases to which mankind commonly falls heir to. They have been very ably assisted by 172 contributors, recognized as teachers and outstanding clinicians in their individual fields of medicine. It *should be noted that this edition has forty-four articles on subjects never included in previous editions.* Due to the new inclusions, along with revisions and additions to previously included subjects, the book has grown in size to one of 1786 pages (a gain of 160 pages). The reviewer has found it practically impossible to select any one section for special consideration since the entire work is outstanding and remarkably complete in coverage. All material is succinctly and clearly presented. At the close of each major article is found a series of well selected reading references. An appendix "Normal Laboratory Values of Clinical Importance," along with a comprehensive index of 98 triple column pages, is found at the end of the text. It is clearly evident to the reviewer that the editors have succeeded in making this edition one which might well be considered the outstanding single-volume medical text and reference book of the year. It should receive a most hearty welcome from the student and the practicing physician.

COL. CHARLES R. MUELLER, USA, RET.

LIVING BONE IN HEALTH AND DISEASE. By Irvin Stein, M.D., F.A.C.S., F.I.C.S., Assistant Professor of Orthopaedic Surgery, University of Pennsylvania; Raymond O. Stein, M.D., F.I.C.S., Associate in Orthopaedics, Hahnemann Medical School; and Martin L. Beller, M.D., Instructor in Orthopaedics, Hahnemann Medical School. 510 pages, 387 illustrations. J. B. Lippincott Co., Philadelphia and Montreal. 1955. Price $15.00.

A monumental piece of work, "Living Bone in Health and Disease" may well become a classical medical textbook. The book is well organized into three parts and adequately indexed.

The first part on "Living Bone in Health" might well be referred to as the "basic science of bone." This part covers the structure of bone, organic and inorganic metabolism of bone, and enzyme, hormones, vitamins and kidney functions, as related to bone. The authors present many viewpoints on unsolved problems with some of the deductive reasoning behind those viewpoints so that this section is not only highly informative but is also very thought-provoking. It is clear that the authors have had considerable personal experience with their subject.

Part Two on "Living Bone in Disease" is quite comprehensive and clearly written in an almost entertaining style. In most instances, for each disease discussed, they give many synonyms and provide an excellent differential diagnosis. A commendable effort is made to explain why certain chemical changes appear in the respective diseases. The authors are careful to delineate fact and theory and advance good reasons for any unproven assumptions they make. Historical notes on the various diseases are enjoyably written. The authors' special interest in Paget's disease is reflected in the disproportionately large amount of space devoted to this subject. The section on Paget's disease is a treatise in itself. Since the authors considered tumors from "their known biochemical effects" on bone, this section is somewhat skimpy. The illustrations, which are mostly photographs of x-rays, are large and clearly reproduced.

The third part of the book on "Diagnostic Classification of Bone Diseases" is largely a tabulation of various characteristics of bone disease for ready reference in differential diagnosis.

Except for minor typographical errors, little objection can be found to this book. In spite of the numerous synonyms presented for most diseases, the authors failed to mention Werner's Syndrome as such in the text although seven illustrations are captioned "Werner's Syndrome." By comparing the figures referred to in the text, one concludes Werner's Syndrome is "Idiopathic Pituitary Disturbance Represented by Progeria."

This book should appeal to students and practitioners alike.

The very thorough bibliography of "Living Bone in Health and Disease" combined with "The Structure, Composition and Growth of Bone, 1930-1953" (a bibliography

prepared by the Armed Forces Medical Library) should provide excellent reference sources for anyone further interested in this field.

MAJ. ROBERT W. PARVIN, MC, USA

DEMONSTRATIONS OF PHYSICAL SIGNS IN CLINICAL SURGERY. 12th Ed. By Hamilton Bailey, F.R.C.S. (Eng.), F.A.C.S., F.R.S.E. Emeritus Surgeon, Royal Northern Hospital, London; Vice-President, International College of Surgeons. 456 pages. The Williams and Wilkins Company, Baltimore. 1954. Price $8.00.

In the middle of the Twentieth Century, which has witnessed the most far-reaching improvements in diagnostic laboratory techniques, it is refreshing to review a book the purpose of which is to restate and demonstrate the importance of HISTORY and PHYSICAL SIGNS in making surgical diagnoses. This is a concept that, as early as 1927, stimulated Mr. Hamilton Bailey in the preparation of the original edition of this book. Each succeeding edition has continued throughout the years to serve as a guide in the training of medical students to "elicit and assemble data upon which to formulate a reasoned diagnosis."

In the introductory Chapter of the book he points out the importance of an adequate armamentarium to increase diagnostic acumen. He leaves to the up-to-date specialist the use of the various scapes which are available to the clinician today. For the students he advocates a list of approximately a dozen simple, inexpensive, diagnostic instruments which should be immediately available. These include such equipment as a transilluminator, tongue blades, tape measure, and thermometer which the surgeon might require in his daily rounds.

The book is divided into chapters according to regional anatomy. Physical signs of the more common and some of the rarer surgical pathologic findings are well described in the text. By far, the most important contribution of this book is the collection of color plates with which the text is illustrated. The vividness with which the physical signs are portrayed adds immeasurably to the value of the book as a teaching aid. Not only are physical signs well described but practical methods of eliciting these signs are discussed and demonstrated in considerable detail.

Although we are prone, in this modern age of medicine, to assign anatomicopathological names to physical signs, in the past, it was common practice to accredit the physician who first described the sign by attaching his name to it. The author has paid deference to the practice of the past and has acknowledged the contributions of our astute predecessors. This has been done without increasing the length of the book by adding as historic footnotes the names of those persons accredited with first describing the individual physical signs discussed in this manuscript.

As indicated by the author no effort has been made to present a complete treatise on clinical surgery but rather to provide a guide for demonstrations and ward rounds in a teaching program for students. By the use of well chosen colored illustrations and concise descriptions of physical signs the author has accomplished his intended purpose. This book should provide a ready source of information for the medical student and resident surgeon.

COL. DOUGLAS B. KENDRICK, MC, USA

GYNAECOLOGY. 5th Ed. By Douglas H. MacLeod, M.S., F.R.C.P., F.R.C.S., Gynaecological Surgeon, St. Mary's Hospital London; and Charles D. Read, M.B., F.R.C.S., F.R.A.C.S., Director, Institute of Obstetrics and Gynaecology, British Postgraduate Medical Federation, University of London. 864 pages; 551 illustrations. Little Brown and Co., Boston and Toronto. Price $16.00.

"Gynaecology" is regarded as one of the most complete and comprehensive books on this subject in the English language.

This volume draws the attention of its readers to the recent developments in endocrinology, chemotherapy, the use of blood transfusion, the early diagnosis of cancer, the importance of infertility, and a further elucidation of problems of pathology.

The textbook is designed to meet the requirements of both students and practitioners covering the pathological and clinical aspects of the subject, and is in sufficient detail to be used as a reference.

The beginning chapters deal with the anatomy and development of the female genital organs, their physiology, and the methods of examination. In order to make the text complete in itself, the last few chapters are devoted to detailed descriptions of the more common gynaecological operations.

For a textbook well written and illustrated and comprehensive in its scope, this book is highly recommended.

COL. J. W. DARROUGH, MC, USAR

SURVEY OF CLINICAL PEDIATRICS. 2d Ed. By Lawrence B. Slobody, M.D., Professor of Pediatrics, New York Medical College. 502 pages, illustrated. Blakiston Division, McGraw-Hill Book Co., Inc., New York. 1955. Price $9.50.

As the author states the rapid advances in pediatrics have necessitated a revision of the original edition of this book which appeared in 1952. This text fits in between the small manuals and the larger standard textbooks of pediatrics, and, as Dr. Slobody emphasizes, is not intended to replace the latter. The author has succeeded admirably in condensing the subject matter down to the highlights and essentials of many different problems. The volume is arranged in the customary form of pediatric texts beginning with a chapter on growth and development in which several useful tables are presented and followed by sections on feeding, preventive pediatrics including a concise discussion of emotional problems, treatment, infectious disease, and discussion of disease by anatomical systems. A useful outline of the differential diagnosis of cyanosis of the newborn and a summary of the diagnostic methods in viral diseases is given. Discussion of more recent pediatric topics such as the use of calcium versenate in lead intoxication, abnormal hemoglobins, postmaturity, agammaglobulinemia, and pyridoxine deficiency are included. At the end of each chapter several questions pertaining to the included material are listed and a form for a pediatric history and physical examination makes up the appendix. Of course, such a volume can not treat conflicting aspects of many subjects adequately. Based on material used in teaching at the New York Medical College, it should find its chief use as a reference text for medical students and general practitioners. It is well written, up-to-date and can be recommended for the above purposes.

H. D. RILEY, JR., M.D.

FLUOROSCOPY IN DIAGNOSTIC ROENTGENOLOGY. By Otto Deutschberger, M.D., Assistant Clinical Professor of Radiology, New York Medical College. 771 pages; 888 illustrations. W. B. Saunders Co., Philadelphia and London. 1955. Price $22.50.

While an extensive literature on diagnostic roentgenology exists which includes many aspects of fluoroscopy, there has never been available for students or the profession a complete written treatise including all phases of this all important branch of roentgenology. This book combines all the fundamental essentials as well as the most recent and approved methods of diagnostic fluoroscopy.

Part One is a general description of the fluoroscopic method including brief historical remarks. This is followed by chapters dealing with essential fluoroscopic equipment and with perception and physical and clinical evaluation of the fluoroscopic image. Special chapters are devoted to the principles of screen amplification; to the hazards of fluoroscopy, and to foreign body localization.

Part Two treats in detail fluoroscopy of specific organs and systems. This portion of the volume is particularly well done. Stress has been placed upon detailed description of the fluoroscopic technique of examination. The potentials, as well as the limitations, are clearly pointed out. An effort has also been made to give advice as to further procedures to be done when fluoroscopy has served its maximum usefulness.

Photographs, all of which are excellent, are reproduced as positive prints showing the shadows dark and the transparencies bright so that they appear as they do upon the fluoroscopic screen.

Each chapter is well documented by a list of pertinent references and the volume is well indexed both as to authors and subject matter.

While there may be, as with any work of this sort, differences of opinion as to methods of procedure and evaluation of interpretations, the author is to be highly complimented upon a much needed and magnificent job well done. This volume should be a necessary and welcome addition to the libraries of student and teacher alike.

COL. J. A. ISHERWOOD, MC, USA

THE MANAGEMENT OF OBSTETRIC DIFFICULTIES-TITUS. 5th Ed. Revised by J. Robert Willson, M.D., Professor of Obstetrics and Gynecology, Temple University School of Medicine. 733 pages, 348 illustrations. C. V. Mosby Company, St. Louis. 1955. Price $12.50.

The authors, in presenting the fifth edition of "The Management of Obstetric Difficulties," carry on the primary aim of the subsequent revisions—to develop a practical aid to physicians who are meeting and contending with obstetrical difficulties and emergencies.

The general practitioner, in every community, often sees complicated obstetrical cases. The medical student during the clinical clerkship and the intern observe obstetrical problems. This book will be of value to them.

Material concerning the management of normal pregnancy, the mechanism of normal

labor, and the uncomplicated puerperium is augmented and consolidated into definite units which serve as the basis for the discussion of the abnormal changes.

The authors draw their information from a vast experience in the field of obstetrics and gynecology, and present in this volume a practical guide for handling the emergencies, complications and difficulties that arise in a small general hospital, at home, or in a large well staffed maternity.

In addition to the subject matter concerning the management of obstetric difficulties there is a section on infertility and another on the newborn infant. The portion of the book on erythroblastosis fetalis and the examination and care of the newborn infant were prepared by Dr. Victor C. Vaughan III, Associate Professor of Pediatrics in the Temple University School of Medicine.

COL. JOHN W. DARROUGH, MC, USAR

MANAGEMENT OF ADDICTIONS. Edited by Edward Podolsky, M.D., Department of Psychiatry, Kings County Hospital, Brooklyn, N.Y. 413 pages. Philosophical Library, New York. 1955. Price $7.50.

This well chosen collection samples treatment-programs that are based on theories over the whole range through psychoanalytic to genetotrophic. Drug therapies are concisely described, from those using Disulfiram, and ACTH, down to mephenesin. AA and other group therapy, conditioned reflex, prolonged sleep, hypnotism, ECT, all are here.

While the editor's foreword does tie the several chapters together, the reader finds much pro- and little anti-, argument per therapy. Each author advocates his own. More discussion of contraindications would help.

Use of material from a number of journals is acknowledged, but the references are not complete. Lack of a subject index detracts from the work's usefulness for reference.

COL. JAMES H. HUDDLESON, USAR, RET.

SEXUAL HYGIENE AND PATHOLOGY. By John F. Oliven, M.D., Psychiatrist to the Vanderbilt Clinic, Columbia Presbyterian Medical Center, Instructor in Psychiatry, College of Physicians and Surgeons, Columbia University. 481 pages. J. B. Lippincott Co., Philadelphia and Montreal. 1955. Price $10.00.

It is universally assumed by the laity that all physicians regardless of discipline know the answers to all matters pertaining to sexual hygiene, sex practices, its deviations and abnormalities.

Actually, there is no period in the medical curriculum undergraduate, post graduate or in actual practice when a physician is presented the opportunity to learn the comprehensive knowledge he should have upon this subject.

Dr. Oliven's book is the first one to collate the problems of sex from infancy, childhood, adolescence, adulthood, the menopause and the elderly in one compact volume.

The subject is treated factually and sensibly. It is a text that reads well because of its carefully prepared correlated approach. The author has something to say on all matters of sexual hygiene and the many pathologic variations of sex practices.

The author is a common sense psychiatrist who has a vast knowledge of pediatrics, gynecology, endocrinology, internal medicine and geriatrics. This comprehensive knowledge fits him eminently for authorship of a book on this subject.

This reviewer believes this book will be a most worthwhile addition to any physician's library. Fortified with the knowledge and guidance contained in this text any physician should be able to counsel his patients on sexual matters with calm composure and equanimity. It is regrettable that Dr. Oliven supplied no bibliography or lists of references for additional reading at the end of each chapter.

CAPT. JULIAN LOVE, MC, USN

NEW BOOKS

Peptic Ulcer, Diagnosis and Treatment, by Clifford J. Barborka, M.D. and E. Clinton Texter, Jr. M.D. Little, Brown & Co., Boston 6, Mass. Price $7.00.

The Management of Oral Disease, by Joseph L. Bernier, Col. D.C., U. S. Army, The C. V. Mosby Co., St. Louis, Mo. Price $15.00.

Progress in Neurology and Psychiatry, Vol. X, Ernest A. Spiegel, M.D. Editor. Grune & Stratton, Inc., New York, N.Y. Price $10.00.

A Short History of Medicine, by Erwin H. Ackerknecht, M.D. The Ronald Press Co., New York, N.Y. Price $4.50.

Human Pathology, by Howard T. Karsner, M.D., LL.D. J. B. Lippincott Co., Philadelphia, Pa. Price $15.00.

Keratoplasty, by R. Townley Paton, M.D., F.A.C.S. The Blakiston Division, McGraw-Hill Book Company, Inc., New York, N.Y. Price $28.50.

Obstetrical Roentgenology, by Robert Berman, M.D., F.A.C.S. F. A. Davis Company, Philadelphia, Pa. Price $12.50.

Portraits from Pentagonia, by Lt. Col. Anthony L. Wermuth and illustrated by Lt. Col. Robert B. Rigg. Military Service Publishing Co., Harrisburg, Pa. Price $1.00.

Polycythemia, by John H. Lawrence, M.D. Grune & Stratton, Inc., New York, N.Y., Price $5.50.

Textbook of Clinical Pathology, 5th, ed., by Seward E. Miller, M.D. The Williams & Wilkins Co., Baltimore, Md. Price $11.00.

Textbook of Surgery, edited by H. F. Moseley, M.D. The C. V. Mosby Co., St. Louis, Mo. Price $16.50.

Applied Medical Bibliography for Students, by Wm. D. Postell. Charles C Thomas, publisher. Springfield, Ill. Price $4.50.

Company Administration and the Personnel Section, 24th ed. by Col. C. M. Virtue. Military Service Pub. Co., Harrisburg, Pa. Price $3.75.

Surgery of the Ambulatory Patient, 3rd edition, by L. K. Ferguson, M.D. J. B. Lippincott Co., Philadelphia, Pa. Price $12.00.

Office Procedures, by Paul Williamson, M.D. W. B. Saunders Co., Philadelphia, Pa. Price $12.50.

Textbook of Endocrinology, by Robert H. Williams, M.D. 2d edition. W. B. Saunders Co., Philadelphia, Pa. Price $13.00.

Cancer Cells, by E. V. Cowdry. W. B. Saunders Co., Philadelphia, Pa. Price $16.00.

Any of the above books may be ordered through the Association of Military Surgeons. Check book desired, and return this page